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CONTENTS.

The whole of the literary matter in THE LANCET is copyright.

THE MILROY LECTURES (Abstracts of) on the Teaching and Training in Hygiene: Some Criticisms and Suggestions. By H. R. KENWOOD, C.M.G., M.B.Ed., D.P.H., F.R.S.E., Chadwick Professor of Hygiene, University of London; M.O.H., Stoke Newington, &c.—Lecture II.. 695

ORIGINAL ARTICLES.

"Botulism" and Heine-Medin Disease. (Notes on the Present Epidemic.) By F. G. CROOKSHANK, M.D. Lond., M.R.C.P. Lond., Physician, North-West London Hospital, Hampstead, N.W.; Medical Registrar, London Hospital, E.; late Captain, R.A.M.C., B.E.F. 699

On the Physiology of "Functional Paralysis" of "Voluntary" Movement, with a Description of a Case of Inversion of the Kinæsthetic Sensations. By T. GRAHAM BROWN, M.D.Edin., and R. M. STEWART, M.B., Ch.B.Edin., Captains, R.A.M.C. 702

Mastoid Disease in the Balkans: Some Notes on Diagnosis. By J. ARNOLD JONES, M.B., Ch.B.Manch., F.R.C.S.Edin., Temporary Captain, R.A.M.C. 704

A Preliminary Note on Graphic Records of Muscle Reaction. By G. M. LEVICK, M.R.C.S., L.R.C.P.Lond., Fleet-Surgeon Royal Navy (ret.). —(*Illustrated*) 705

Meningococcus Agglutinating Serum: a Method of Increasing the Yield from the Rabbit. By A. S. GORDON SELL, M.R.C.S., L.R.C.P. Lond., Temporary Major, R.A.M.C., of the Central Cerebro-spinal Fever Laboratory; and Miss I. M. HARMER, of the Central Cerebro-spinal Fever Laboratory 705

CLINICAL NOTES:
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

Note on 28 Cases of Ruptured Gastric Ulcer amongst Soldiers with Two Deaths. By CHARLES E. MURPHY, F.R.C.S. Irel., Captain, R.A.M.C. 708

A Plastic Operation for Apparently Lengthening an Amputation Stump. By S. ALWYN SMITH, D.S.O., M.D., Ch.M., F.R.C.S.Ed., Major, R.A.M.C. 706

Notes on a Case of Botulism. By W. CAREY, M.B.Edin., L.R.C.S.Edin. 708

MEDICAL SOCIETIES.

ROYAL SOCIETY OF MEDICINE: SECTION OF ODONTOLOGY 707
CLINICAL SECTION 707

REVIEWS AND NOTICES OF BOOKS.

The Theory and Practice of Massage. By Beatrice M. Goodall-Copestake 708

Handbook of Anatomy for Students of Massage. By Margaret B. Björkegren. Second edition 708

Modern Dental Materia Medica, Pharmacology, and Therapeutics. By J. P. Buckley, D.D.S. Fourth edition 708

NEW INVENTIONS.

Continuous Extension During the Transport of Fractured Femurs (B. Whitchurch Howell, F.R.C.S.Eng., Captain, R.A.M.C.)—(*Illustrated*) 708

LEADING ARTICLES.

RECENT DEVELOPMENTS IN THE ARMY MEDICAL SERVICE 709
THE PHYSIOLOGY OF "FUNCTIONAL PARALYSIS" OF "VOLUNTARY" MOVEMENT... 710

ANNOTATIONS.

The Inter-Allied Conference on the After-Care of the Disabled Ex-Service Man 711
Analgesia by Oral Administration 711
Panel Practitioners and their Representation in Parliament 711
Amenorrhœa in War-time 712
The Need for Schools for Physically Defective Children 712
"An Obscure Disease with Cerebral Symptoms" 713
Possible Causes of Confusion in the Diagnosis of Mastoid Disease 713
The Treatment of Neurasthenics at Golders Green 713

SPECIAL ARTICLES.

The Belgian Doctors' and Pharmacists' Relief Fund.—Subscriptions 713
An Obscure Disease with Cerebral Symptoms Recently Prevalent: the Action of the Local Government Board 714
Royal College of Surgeons of England 717
The Services 719
Urban Vital Statistics: Vital Statistics of London during April, 1918 720

CORRESPONDENCE.

The Primary Examination for the F.R.C.S.Eng.: an Appeal to the President of the Royal College of Surgeons (Sir William Osler) 715
Acute Epidemic Encephalitis (Dr. E. Farquhar Buzzard) 715
Botulism (Dr. Robert E. Lord) 715
Epidemic Stupor in Children 715
Serum Tests for Syphilis (Dr. W. W. C. Topley) 715
The Army Medical Service and Medical Progress (Surgeon-General George J. H. Evatt) 716
Medical Service and the Question of Compensation (Dr. D. Fenton) 716
The Prevention of Measles Mortality (Dr. Sidney Davies) 717
Mucous Colitis Treated with Charcoal (Captain R. Steele, R.A.M.C.) 725
Ascaridiasis Simulating Appendicitis (Dr. Ethelwyn M. Walters) 725
The Condition of the Blood and Bloodvessels in Shock (Mr. C. Hamilton Whiteford) 725
Hallex or Hallux? 726

THE WAR.

The Casualty List 717
Casualties among the Sons of Medical Men 718
The Honours List 718
Mentioned in Despatches 718
The Calling-up of Medical Men 718
Invalided Soldiers in Canada 718

OBITUARY OF THE WAR:
Solomon Cross, M.B., B.S. Durh., Captain, R.A.M.C.—(*With Portrait*) 718
Alfred Linton Gardner, M.R.C.S. Eng., Captain, R.A.M.C.—(*With Portrait*) 718

MEDICAL NEWS.

Small-Pox Accommodation in Cornwall 704
The Salaries of Poor-law District Medical Officers 706
Donations and Bequests 717
Literary Intelligence 719
Royal Colleges of Physicians of London and Surgeons of England: Pass-list 721
Royal College of Physicians of London 721
Royal College of Surgeons of England: Pass-list 721
Epsom College War Memorial 721
Exeter Insurance Committee 721
Dispensary Medical Officers and Irish Boards of Guardians 721
Medical Society of London 722
Medico-Psychological Association of Great Britain and Ireland 722
West London Medico-Chirurgical Society 722

PARLIAMENTARY INTELLIGENCE.

House of Lords 723
House of Commons 723

NOTES, SHORT COMMENTS, &c.

The Personnel of the U.S. Army Medical Department 725
Fracture of the Spine in a dog Treated by Charcot's Suspension 725
Amycaine 726
Cancer Prophylaxis in Man 725
Sun Meningitis Relieved by Lumbar Puncture 725
A Swiss Medical Benevolent Institution 726
Dalrymple House, Rickmansworth 726
"The Athenæum" Subject Index 726
Gentian Violet in Joint Infections 726
A London Directory of District Nursing 726
Fees for Medical Attendance on the Wife of a Medical Practitioner 726
A Tailor's Thimble in the Naso-Pharynx 726

Appointment, Vacancies 722
Births, Marriages, and Deaths 722
Medical Diary 722
Editorial Notices 724
Acknowledgments of Communications received 724
Books, &c., received 724
Meteorological Readings 726

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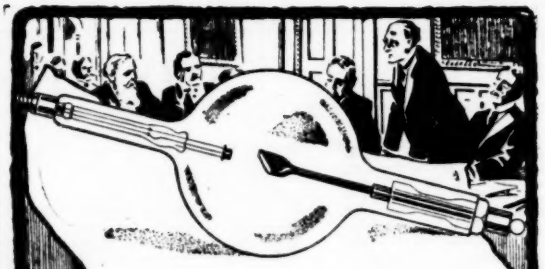

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Our efforts to meet the public health needs of the community take many channels, which grow broader or contract as our work and experience progress, and we have to lighten our labours on matters of receding importance so as to be able to work more upon others which have grown into greater prominence and are claiming more of official energies; and so it must be with the training of the medical officer of health.

Take, for instance, the subject of the preservation and development of child-life, linked (as it must be) with the study of associated social problems; this demands a much more extended study than has hitherto been given to it by the D.P.H. student. The medical officer of health must figure prominently in connexion with this difficult branch of work; and ought we to prejudice his ability to do so with the maximum effect by directing his energies while in training to the acquisition of matter with which he has little need to burden his memory?

I wish it to be realised that I do not advocate that the training of the D.P.H. student should be made more easy, but rather that we should make his knowledge of the more essential matters less superficial, and thus increase the practical value of his training. More particularly is it desirable to relieve him from the strain of committing to memory much that a skilled chemist, bacteriologist, or lawyer would consult his books upon; and his success at a D.P.H. examination should depend upon his knowledge of social circumstances, and the manifestation of organising and administrative capacity, judgment, and general intellectual attainment, as well as upon his ability to answer text-book questions.

The medical officer of health, as the responsible adviser of the local authority, is looked to for general advice and detailed suggestions for the prevention of any mortality which can be brought under administrative control, and it is necessary that he should be mentally trained to weigh and sift evidence and to form a sound and independent judgment of the relative value of administrative measures. He should be educated for these purposes, as well as carefully trained in the actual executive work which devolves upon him. I have referred elsewhere to the fact that much of the more modern public health work partakes of the nature of an educational campaign. The director of the campaign is the medical officer of health, and his small army of workers nowadays includes many who are not directly under his official control; even the school attendance officer is becoming a scout of the Public Health Service. This points to the necessity for him to devote more attention to his functions as an administrator and propagandist, and to the social factors which in such great measure dominate the public health situation, and for him to leave to an increasing extent the technical work of sanitation, &c., to his staff.

THE GENERAL PRACTITIONER AND THE PUBLIC HEALTH SERVICE.

Has the training of the medical officer of health been sufficiently attuned to these facts? I think not. It is, I believe, because the training of the medical officer of health has been too rigidly technical and has not taken sufficiently into account the administrative, propaganda, and social sides of his work that the medical officer of health service, although organically sound, has never fully functioned. The many capable units have, collectively, failed to influence and activate public opinion and Parliament to any great degree, and the result is that we are flooded with public health movements representing uncoördinated and overlapping efforts—developed from good public spirit and intention—which might under proper guidance have been better directed and shaped.

Superficially regarded, our work would appear to be encroaching more and more upon the domain of the general practitioner. This is responsible for the regrettable circumstance that the medical officer of health and his colleagues in general practice are not always in mutual sympathy. The circumstance reacts to the disadvantage of both parties. It is so much in the interest of the public health of any community that a close and sympathetic coöperation should exist between medical practitioners and the Public Health Service that it is our first concern to establish and maintain it. This has grown more necessary, and perhaps less easy, with the more recent extensions of official public health endeavour, as witnessed in our antenatal, infant- and child-welfare, medical inspection of school children, tuberculosis dispensary, and venereal disease work, which, though seldom of the type performed in general practice, closely borders on the legitimate province of the local general practitioner.

I doubt whether a fair and sympathetic regard to his interests will be sufficiently guaranteed without providing that every medical officer of health shall have had some experience of general practice. This requirement would be a very real service to the cause of public health, and if it cannot be secured the case is strengthened for a longer period of work with an experienced medical officer of health while the candidate is in training.

On its domestic and economic side is there not a great change taking place in the practice of medicine, and is it right to almost ignore the social factors affecting human health and handicapping treatment in our training of the present-day medical student? His study of social circumstances is almost neglected, and much of the practice of medicine is thereby robbed of effect and meaning; for the medical student generally comes from a comfortable middle-class home and commences practice very ignorant of the conditions under which the lives of the majority of his patients are passed. In a recent leading article in THE LANCET it was truly stated that—

> "The man who at the conclusion of an ordinary course of medical study enters general practice finds that he has to start afresh; that is, if he wishes to understand his patients and to store wisdom and experience by re-educating himself on new lines for the tasks before him."

Some social study and a better knowledge of preventive medicine would add great value to the training of the general practitioner of medicine.

TRAINING OF GENERAL PRACTITIONER.

Before the best results can be obtained from the preventive work of public health the general practitioner must be better prepared to play his rôle, and it is imperative that hygiene and preventive medicine is given a more prominent place in the training of the medical student.

At present the freshly qualified medical man knows little of hygiene, yet matters of hygiene constantly come before every medical practitioner, and modern medicine is becoming more and more preventive in its nature; and so a medical practitioner can hardly do his duty to his patients and the community unless he pays more attention to this

[1] Lecture I. was published in THE LANCET of May 11th, 1918, p. 663.

subject. The practical knowledge which the average practitioner possesses of infant hygiene is deplorable from every point of view, and the increasing infant- and child-welfare work is tending to impress the fact upon the public that medical practice is not concerned with the prevention of disease but only with its cure; and that it is only from other agencies and from certain specially trained medical men that the best advice of all—namely, that which deals with the avoidance of disease—can be obtained.

In most medical colleges the subject of hygiene is dealt with in about 20 lectures, in many cases without demonstration and practical work. In the lectures the subject might, with advantage, be treated less generally than it is, and the special and essential needs of the general practitioner be kept more in view. The attitude of the students to the subject is passive and inattentive rather than active and keen. It is not regarded as real and important from their standpoint, which is the examination one.

It is not surprising, therefore, that the examiners in hygiene for the medical degrees and the Board of Studies in Hygiene of the University of London have reported (1913) that—

"The working knowledge of matters of hygiene which many candidates possess is very imperfect and unsatisfactory. The circumstances mainly responsible for this is the fact that a candidate rarely, if ever, fails in the examination by reason of his lack of knowledge in this subject alone."

The undergraduate study of this subject must be taken seriously; it must be everywhere a final examination subject, and if pass marks are not obtained the candidate should be referred for further preparation.

THE EFFICIENT TRAINING OF THE MEDICAL OFFICER OF HEALTH.

But I would emphasise the fact that the expanded and expanding subject of public health is making an increasing demand upon both the teacher and the student. The ever-broadening field of work requires that a much larger staff must now be employed at training centres if it is to be efficiently done. It is quite impossible, for instance, for the one lecturer who formerly took the whole range of hygiene and public health to adequately deal with the present-day special demands of epidemiology, general hygiene, school hygiene, infant hygiene, vital statistics, sanitary law, the diseases of man communicated by all the lower forms of animal life.

As the adequate presentation of these subjects is growing to demand the services of special lecturers, it is desirable that there should be a greater concentration of this training work at fewer centres, where more complete arrangements can be made to meet the needs; and a sufficiency of candidates renders all this possible. But even then the problem will remain of how to provide a sufficiently high standard of training within the time which the student is prepared to devote to this subject, seeing that the prospects of an appointment are uncertain and the remuneration (now that the pecuniary prospects of general practice are improving) is becoming less alluring.

One would expect that the special study of public health subjects would receive more support and encouragement from the State, seeing that it has long since proved its national value in a thousand striking ways; but, like other forms of post-graduate study, the work has to be maintained under difficulties which are, to say the least, discouraging. The public health department of our universities and colleges is generally so starved that it is impossible to make such provision as could and would be made were the necessary funds available; and fees which are in excess of what many can afford to pay have to be charged in order to keep the loss on the department within reasonable limits.

There is no branch of public work which the State is more concerned in promoting, by securing that its post-graduate study shall be efficient, cheap, and attractive; and State funds devoted to this end could but be regarded as a sound public investment. It has been said by Sir Isambard Owen that—

"In this country science is lauded to the skies in words, and left to starve in fact; and even research is commonly regarded as though it were merely a matter of private ambition and concern."

The most brilliant and promising students of public health can rarely afford to make the necessary sacrifices of time and money for research work; and so this is often done, not by those who are the most gifted, but by those who are fortunately circumstanced in a pecuniary sense. At present little research comes before the ken of the public health student while it is being conducted; and this circumstance is a weak link in his training—for it is both educational and stimulating.

REMUNERATION AND PROSPECTS.

It is certain that if the various branches of the Public Health Service are to continue to attract the best class of man the scale of remuneration for services will have to be increased. More particularly is the school medical work underpaid. It is one of the most exacting forms of public health service; and it demands the energies of highly trained individuals, if it is to be well done. The remuneration of £350 per annum for this work is a mischievous form of parsimony in the allotment of public funds to one of the most important, difficult, and responsible forms of public service.

There is no gainsaying the fact that the more sincere we become in our efforts to make the training for the D.P.H. adequate in all departments of study the less satisfied are we with our, at best, inadequate provisions; and as we behold the ever-expanding scope of work in all the branches of study which concern the public health, we seek around with growing concern for the remedy. How are we to solve the problem to the best advantage of the D.P.H. candidate? Unless some comparatively unimportant items in present-day training are discontinued the ever-increasing demands made upon him *must* tend in the direction of a greater superficiality of knowledge, unless he is prepared to devote much more time to the work; and this is improbable—indeed, in the circumstances, it is unreasonable to ask it.

Think of the present demands that are made upon the time and purse of the would-be M.O.H.! After completing a difficult and expensive training in medicine, surgery, and midwifery, extending over a period of five years, he has to devote at least nine months to work calling for his best energies to meet the regulations for the D.P.H. But the mere possession of this diploma will not, except in rare instances, suffice to secure his appointment as a medical officer of health; he has yet to devote six months or a year to some unpaid, or little paid, assistant or deputy work to a medical officer of health. He must then count himself fortunate if he secures an appointment with an annual stipend of £300 a year; and this he must hold for a year or two before he has a fair prospect of securing a better post of £500 per annum. Moreover, if he is able later on to secure one of the "plums" of the Public Health Service his income will barely exceed £1000 a year. During all his years of service he will probably have no security in the tenure of his office; and a lengthy period of devoted work seldom secures him a pension for his old age.

In the face of all these facts I have not yet ceased to marvel that the public health medical services continue to attract so many good men. But I doubt whether this will continue to be the case, in face of the generally improved financial status of the younger members of the profession. I therefore suggest that the Local Government Board must take a strong position in securing a better remuneration for public health medical services—if the quality of the services (and therefore the training) are to be maintained at a satisfactory level.

RESPECTS IN WHICH TRAINING MAY BE CURTAILED.

How, then, are we to adjust the growing demands of training to the time limitations? *The scope of training should be more closely related to the actual functions of the future medical officer of health.* Much that is now embraced and has no practical application to the needs of such an official must be omitted, in order to devote the valuable time it takes up to a more highly specialised training in essentials.

The present lecture programme could be curtailed and largely replaced by fewer lecture-demonstrations and the student left to study selected text-books, guided by an experienced tutor in public health. After all, the D.P.H. student is in a different class to an undergraduate; he can help himself from a text-book to much of the matter upon which at the present day he is asked to listen to a lecturer. It is not argued that *certain* lectures are not helpful and indeed essential; the contention is that these lectures need form but a small proportion of those which are at present offered.

Such a tutor in public health would be complementary to the text-books and make possible a much-reduced lecture

programme; he would direct the reading of the students; would explain and supplement the subject-matter of the text-books recommended, and (as a guide to him) questions would be asked, invited, and answered upon the matter previously set the class for reading; and he would set test papers from time to time.

Chemical Work.

Bacteriology has very properly become an exacting branch of public health training. But the range of public health chemistry, which was formerly far too narrowly defined—if, indeed, it may be said to have been clearly defined at all—has now become unwarrantably extended, inasmuch as it is held at many examination centres to include analytical matter which has no bearing whatever upon hygiene. It is almost certain that there will be a contracted scope of chemical work in the D.P.H. training of the future, for this will be taking a much better perspective of the student's needs.

A sound practical knowledge of certain essentials should not be prejudiced by the introduction of superfluities. The near future must see to it that a higher standard of training in that practical chemical work which some health officers (in this country) may be called upon to perform, replaces the present more diffuse knowledge of much that can never be needed, which takes up valuable time and is soon forgotten.

As one who has acted for some years as an examiner at D.P.H. examinations in London and many provincial universities, I should much like to see an end to what is my common experience—viz., candidates so trained that they are better able to distinguish between butter-fat and other fats than to obtain fairly accurate results, and form a correct judgment thereon, in respect to water analysis. There is no reason whatever, so far as I can discern, why the details of the chemical work with which he should be practically familiar should go beyond the analysis of water and sewage effluents, milk, and infant foods; the estimate of CO_2, dust, and the detection of CO in air; and the strength and relative values of disinfectants; and even then it is a question whether he should not be allowed to use his notes at the practical examination.

This would really restrict the chemical work to practical issues so far as the medical officer of health is concerned; it would provide him with useful information; it would suffice to enable him to interpret aright the chemical reports that are likely to be submitted to him; and it would equip him with the technique that will qualify him to undertake research involving some chemical work should he desire to do so. It is out of all proportion that a D.P.H. candidate should be asked, as at present, to devote as much time to chemistry as he does to bacteriology; and it must be realised in this connexion that only a very small minority of medical officers of health themselves undertake *any* chemical work.

Sanitary Engineering.

Another striking change which the past quarter of a century has witnessed in the training of the D.P.H. student is the growing tendency to relegate the subject of sanitary engineering to its proper position. It is not suggested that this subject no longer holds an important place in public health work, but it has been displaced from the position of exaggerated importance that was formerly assigned to it. Preventive medicine has not fully recovered from this narrow, myopic outlook, for the man in the street still associates the detection and remedy of drain nuisances as the main function of the medical officer of health.

The D.P.H. student could safely be relieved of the study of some of the technical matter of sanitary engineering, as this is relegated to the sanitary inspector. There is no need for the medical officer of health to burden himself with the details of a branch of work of which another official will always possess a better practical knowledge than he. It will suffice for all purposes if he has a good general knowledge of the *principles* of practical sanitation.

Sanitary Law.

I would suggest a further relief to the large amount of matter which the D.P.H. student is required to memorise, in respect to the subject—the difficult subject—of sanitary law. I can recall that when I obtained my first public health appointment I found the clerk to the local authority (who was one who had, in addition to his legal studies as a solicitor, an experience of 15 years of official work) unable to commit himself on points of public health legislation which I was expected to know at the D.P.H. examination until he had consulted the books. I then asked myself whether all that I had stored in my memory with such difficulty was really necessary, and, if not, whether it was desirable, seeing that my knowledge of more essential matters suffered in consequence.

The official medical officer of health is not the legal adviser to the sanitary authority any more than he is the public analyst; and if he were required to act in either capacity his D.P.H. training would be ludicrously inadequate to his needs. Ought we not to act upon these facts? The details of sanitary law, as now "crammed," are the first matters to be forgotten after the examination, and a general impression of powers is all that remains. A considerable amount of study could be set free for other more important matters if, in addition to a good knowledge of the scheme of local government, only a knowledge of sanitary law in general outline was required, save in respect to a few particular items of special importance.

DIRECTIONS IN WHICH TRAINING NEEDS EXTENDING.

Having seen some of the respects in which the training work may be abridged, let me next briefly refer to important directions in which it needs extending.

No teachers or examiners will dispute the need of a closer study of epidemiological matter, not only as an equipment for the duties of a medical officer of health, but also as a greater stimulus to useful research, for the incidence of much communicable disease still resists all our efforts at reduction. Some better acquaintanceship with the sociological circumstances which form the setting and affect in such great measure the solution of most public health problems is also very greatly needed.

Practical Training.

A colleague of considerable experience as a teacher and examiner writes to me a letter which is typical of many that I have received:—

"I am convinced that the amount of practical training which students of public health receive at the hands of medical officers of health is often very scant. Little attempt is made to familiarise the student with administrative work, housing inspection and report, the examination of food, the procedure of public bodies, the drafting of reports for committees, the compilation of mortality tables, and many other practical aspects of the work of a medical officer of health."

I am often driven to the same conclusion; and it is evident that Rule 3 of the General Medical Council, requiring that the candidate undergoing the prescribed period of training with the medical officer of health shall attend, under the supervision of the medical officer of health, on not less than 60 working days, is generally far too meagre in training results. Often nowadays a medical officer of health has to organise the medical inspection of school children, school clinics, maternity and child-welfare centres, a tuberculosis dispensary with associated provisions, measures to reduce venereal disease (including venereal clinics), and the supervision of midwives; and yet many candidates sit for, and obtain, a qualifying diploma without any first-hand knowledge or experience of the practical working of such essentially important provisions.

The real requirements of this branch of training are that the fullest opportunities shall be given to the student to familiarise himself with *all* the work, duties, and powers of a medical officer of health, and incidentally with social conditions. It is the most important branch of his training, and yet it is, generally speaking, the weakest. An extended pupilage of not less than six months is certainly needed. Only thus can this most essential side to the student's training be satisfactorily provided, and the medical officer of health and local sanitary authority must play their part in supplying this in the interests of the service.

Those medical men who serve sanitary authorities essentially for the performance of duties in connexion with such matters as maternity and child welfare, tuberculosis, venereal diseases, the medical inspection and treatment of school children, and the like, must be specially trained in their respective branches of work. That is, of course, essential; and they must not lack the knowledge of the organisation necessary for their work, but it is not necessary for them to take out the full course of study required for the D.P.H. It is a more extended knowledge of clinical work that is required and an experience of the particular branch they undertake. For instance, with respect to the medical inspection of school children, their knowledge must be tested and brought into the perspective

of school inspection by a period of attendance at a school clinic. The ordinary hospital out-patient clinic gives quite a false impression of the relative importance, from the school point of view, of various ailments and defects.

All the medical officers above referred to should be regarded as medical specialists with corresponding status and emoluments. If they elect to share in the wider public health training of the medical officer of health so much the better, and, doubtless, many will continue to qualify themselves for the duties of a medical officer of health, so that when the opportunity presents itself they may secure such a post.

ADVANTAGES OF A CENTRAL INSTITUTE OF HYGIENE.

The training of the public health student is of such great importance to the nation, the student, and the subject that there will be no disposition to regard a suggestion for the establishment of one large School of Hygiene, which is worthy of the Capital of the Empire, from any narrow standpoint; even those who have done much good work in the development of centres outside London will recognise the many claims that London possesses to be the home of such an institution.

The Position of London.

London is a city which possesses ten centres, claiming the part-time services of some 40 of staff, for the training of about 140 D.P.H. candidates in the year. At seven of these centres the students in 1913-14 averaged but three or four at any one time, and nearly all of these centres are incorporated or affiliated to the University of London. Thus, instead of the university possessing one adequately equipped centre which would suffice for the purpose, the anomaly is suffered to exist of many centres, each commendably struggling to do its best under seriously handicapping circumstances, but not one centre is capable of developing on a sufficient scale because many of the medical schools continue to cater for the needs of their own students, even when these are post-graduate.

If but a portion of the energy and devotion bestowed upon a mere handful of students at each of these schools could be focussed in a university centre (available to external as well as internal students), properly staffed with a proportion of whole-time teachers, fully equipped for teaching purposes, and with adequate provisions for research, what an economy (at least in effort) could be effected and what benefits would accrue to the subject and the student, not only in London but indirectly in the provinces also. It may be truthfully said that the present centres are more or less starved. They are sources of expense to the medical schools, which surely would gladly be relieved of them if they were satisfied that better facilities could be afforded to their students at a special university centre, to which (in the majority of cases) one of their part-time teachers could be attached, if he so wished.

Post-graduate Study.

Is it not a reproach that London has never developed a teaching centre in any department of post-graduate medical work which is worthy of the Great Metropolis of the Empire? Much fine individual work is done at many centres, and the amount of material to work upon is unequalled by any other city; and yet the post-graduate student is indifferently catered for.

London could attract large numbers of post-graduate students of hygiene, as the opportunities it can offer are unequalled elsewhere; for in the vast city and its environs there exists a unique advantage for demonstrating practically every variety of provision made in the interests of the public health. Therefore we should possess in these islands a School of Hygiene of which we could be proud, as worthy of the country which is universally recognised to have excelled in practical sanitation and the general application of the principles of preventive medicine. Foreign students of hygiene who occasionally find their way to London, only to be disappointed and discouraged by our mean provisions for helping them, would then come in greater numbers; and London would for the first time vie with some of its continental sisters in the desirable aim of attracting foreign post-graduate students.

Research Work.

The paucity of research students in the important subject of hygiene is regrettable. At the ten centres where the special instruction for the D.P.H. candidate is provided the number of research workers averages about 16, while there is accommodation for some 130 of such workers. (These figures do not include the workers at the Lister Institute, nor the research workers in branches of pathology which have no direct public health application.) This paucity is to be attributed partly to the unstimulating conditions at the teaching centres, but mainly to the scant endowment of this work. The student who (as a rule) has but recently obtained his medical qualifications and then gives a further nine months or a year to the work necessary to obtain a diploma of public health can but rarely afford to devote further money and time to research; but there are good grounds for believing that many would usefully so employ themselves if in the meantime a living wage could be offered them.

The proposed centre would do much to increase our output of research work. At such a centre at least five research scholars, with annual stipends of £150, ought to be constantly maintained; and set arrangements would be made to instruct and interest the students in the research work as it progresses. This would be helpful in the training of the public health worker, and it would stimulate many to subsequently undertake this important branch of work.

Standardisation in Training.

Fault is often found, and justly so, with the unequal training provisions to be found, not only at the London post-graduate teaching centres but also at those of the provinces. No regulations of the General Medical Council, no examination centres (with varying standards) are capable of effecting the standardisation which is so important to teachers, examiners, and students alike; but the London University centre would attract some of the most experienced workers in hygiene and public health in this country, and it would represent the best provision for the real needs of the public health student, and so would tend to determine the methods and scope of all such teaching and training. In other words, its findings as to the proportion to be maintained in the treatment of the many branches of work and study involved in the training of the medical public health worker would be authoritative, and so generally accepted by teachers and examiners everywhere.

The scheme of training needs revision from time to time. The recognised chief centre will undertake this, and all concerned would gratefully accept its guidance; more especially would this be so if the chief provincial centres were represented upon an advisory board of the centre.

CENTRAL INSTITUTE OF HYGIENE: OUTLINE OF SCHEME.

At this central Institute of Hygiene there would be social study courses provided, both for undergraduates and post-graduates. These courses would be conducted by a university teacher, and would include addresses by experienced social workers and much observation work by visits.

In connexion with the centre a summer course would be arranged for those who are already engaged in various kinds of public health work. Such a course is greatly needed, and in connexion with it a round of visits would be arranged to special public health provisions outside London. A very useful round of visits could be made in the course of a week, and so there would be provided a much sought-for opportunity, not only by British workers but also by foreign colleagues.

The centre would also provide what we must all agree in believing is a legitimate function of a University centre—namely, occasional opportunities for popular instruction. University evening lectures on subjects bearing on hygiene would attract good audiences, and in addition to effecting much good by disseminating useful knowledge would advertise the university (so necessary in a large city like London), and by exciting interest and appreciation assist in obtaining public donations for study and research.

Such a provision has been advocated (1912-13) by the Board of Studies of Hygiene of the University of London, and the Faculty of Medicine approved of the recommendation. The Board of Studies of Hygiene reported in 1913:—

> "There is a need for one well-equipped centre of hygiene for London to coördinate, develop, and raise the standard of public health teaching and training; and with this provision better opportunities than those which now exist would be afforded for the maintenance of a good record of research work. The post-graduate student at this centre would obtain his experience of the work, routine and special, of the medical officer of health by arrangements made with those medical officers of health of London and the suburbs who would be willing to undertake this work under conditions to be mutually agreed upon.

The suggested centre would be a part of the University of London, under definite university management, and a special appeal should be made by the university for the necessary money to provide, equip, and endow it. At this one university centre the undergraduate teaching of hygiene and public health may eventually be concentrated under conditions which prove to be acceptable to the medical schools; but the great and immediate need for the provision now suggested is in respect to the post-graduate worker. A better provision for undergraduate teaching and training is, however, desirable; it would lead to a real economy in, and a far better equipped provision for, the teaching and training of the undergraduate.

The scheme in its entirety would involve a reduction in the number of those at present engaged in the teaching of the subject, but it would secure the advantages of a greater proportion of whole-time workers, and the anomaly of ten centres for the teaching of 140 post-graduate students would disappear."

Need of Financial Assistance.

With reference to the staff required at the proposed university centre there would be seven or eight lecturers (two of whom should be professors and two assistant professors), eight demonstrators (four full-time), and eight full-time unqualified assistants; and, for the purposes of organisation, one of the professors would be appointed to act as the director of the institute. Arrangements would be made whereby, throughout the whole of each working day, either a professor or an assistant professor would be in charge. The Board of Studies of Hygiene prepared full particulars as to staff, assistants, and laboratory servants; as to the requirements of suitable premises and their equipment. The estimated cost of the building, exclusive of site and equipment, was £30,000; the annual cost of maintenance was estimated at £8500; and the income, at the start, at £2000 per annum. Therefore the scheme involves an annual expenditure of £6500 in excess of income. Assuming that the annual cost remained at £6000—that is the sum which the nation is spending on the present war every two minutes!

But the project does not seem likely to be realised unless some useful donations and endowments can be secured, by a persistent appeal voiced by those who are specially interested in the future of hygienic teaching and training; for success the scheme needs the determined efforts of devoted champions. Immediately after peace is declared the time will be ripe for action, for it is certain that after the war there will be a greatly increased demand for post-graduate public health training; and London, notwithstanding the disabilities referred to, has always attracted the large majority of such workers.

"BOTULISM" AND HEINE-MEDIN DISEASE.

(NOTES ON THE PRESENT EPIDEMIC.)

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IT may be asked, without frivolity, whether the use of the word "botulism" in connexion with the cases now attracting such general attention is not equivalent to the traction of an alien and enemy comestible, though not a red herring, across a profitable line of clinical inquiry. Reflection, and the experience of the last two weeks, I think, must have convinced most people that, as has been thought by some of us from the first, the various cases now under observation are clinically indistinguishable from the various "types" of polio-encephalitis, or, more accurately, meningo-myelo-encephalitis, that are exemplified in epidemics of the Heine-Medin disease. It is, I believe, not too much to say that no cases now under observation have been without counterparts in Heine-Medin epidemics, and, at the worst, it is probably only premature to say that no "type" of Heine-Medin disease is without its compeer in London to-day.

The Question of Pathological Identity.

Leaving, however, on one side for the moment the question of clinical identity—or, rather, assuming that there is such clinical identity—the question of pathological identity remains. Certainly, so far as the gross, and I believe also the finer, results of post-mortem examination are concerned, there is no discrepancy; and investigation of the blood and cerebro-spinal fluid reveals no obvious incongruity.

But whatever the *presumption* we must attend: (1) the application of serum tests; (2) the transmission of the disease to apes; (3) the identification of the Flexner bodies, or perhaps it should be said of Rosenow's streptococcus; and (4) the accumulation of blood count records showing the leucopenia described by Eduard Müller, or the other blood pictures described by American authors.

Moreover, however great may be the apparent certainty that the cases are *clinically* identical with examples of Heine-Medin disease, unless there is proved to be *pathological* identity in the completest sense it cannot be said that the suggested diagnosis of botulism is driven off the field completely; if, alternatively, we have not to deal with a "new" disease.

For a simple reason: the authentic accounts of outbreaks of botulism furnish no grounds for saying that, *clinically*, cases of botulism differ in any way from *certain* types of Heine-Medin disease.

This statement, which I believe is incontrovertible, leads directly to a question that must needs be propounded. Has it been proved, with bacteriological rigour, that any of the cases called "botulismus" were really due to infection, or rather to intoxication, by the products of the *Bacillus botulinus* described by van Ermengem? Competent authority assures me that, so far as a critical examination of the published *records* can determine, this has been proved; and I must there leave the point. But it must be said that in America certain outbreaks of disease, *clinically* resembling certain types of the Heine-Medin disease, have been associated with the commensal ingestion of certain canned *vegetable* foods, though without in more than a few cases the conviction of *B. botulinus;* while others, in Germany, have been found associated with organisms other than the *B. botulinus* (Much). But again, it cannot be said, merely from an examination of the records, with what rigour the bacteriological work was carried out on which the conclusions were based. So far as I am aware, however, no bacteriological proof is forthcoming that any of the *present* cases are due to bacterial infection or to intoxication by the products of bacterial activity, whether associated with food consumption or not.

Relation to Food Consumption.

We are therefore entitled to discuss, on its merits, the question of the clinical identity of the present disease with the Heine-Medin affection, while awaiting the conclusions of pathological and bacteriological investigations. The relation of the present cases to food consumption must first be mentioned. It cannot honestly be said that there is so far any conclusive evidence that any general class or particular examples of food have been implicated. We all eat canned foods, and many, if not all of us, sausages, nowadays; while it does not appear, as yet, that, in more than a few instances, if any, have members of the same family or of the same commensal group been affected by the present epidemic. But, since in epidemics of the Heine-Medin disease each person the subject of marked nervous symptoms is probably but one of a small group of infected persons of whom the majority do *not* display signs of implication of the nervous centres (or, if so, in only an abortive form), it cannot be said that the absence of evidence that the present disease is due to food or connected with food distribution or consumption really inclines the balance in favour of Heine-Medin disease as opposed to any form of food poisoning; nor, if closer investigation and the discovery in the future of commensal abortive cases does suggest such a connexion, will the balance be turned decisively against the Heine-Medin hypothesis of the present epidemic.

It is perfectly credible, though as yet unproved rather than disproved, that the virus of the Heine-Medin disease (if, as now for the most part believed, it is one and specific) is transmitted, and the disease propagated in more than one manner. Nay, it is even probable; and, moreover, it is probable that the different outbreaks or epidemics are connected in part with differences in modes of propagation.

Consider typhoid fever. Clinically, milk-borne typhoid differs from typhoid transmitted elsehow. It is milder, it is less contagious, it displays a rash less frequently, it is less frequently accompanied by diarrhœa, and it notably affects younger persons. If we knew nothing of the bacteriological basis of typhoid and approached the disease anew, would not some observers recount outbreaks of "milkism" and dispute its identity with, while admitting its resemblance to, "oysterism," or the virulent affection transmitted during the Boer War by flies?

One thing is certain, whilst by no means ignoring the *possible* connexion, at least in part, of the present epidemic with food consumption—whether or no it be indeed Heine-Medin disease—it is of the greatest importance that all deviations from health, on the part of those associated commensally or otherwise with sufferers from marked nervous symptoms, should be studied with care, however irrelevant they may seem to the symptoms that are now attracting public attention. Especially is this true of cases of pulmonary and gastro-intestinal disorder, anomalous in type, or rapidly fatal.

Question of Clinical Identity with Heine-Medin Disease.

I return to the question of the *clinical* identity of the present epidemic with the Heine-Medin disease. Heine-Medin disease is the name given to a conception, in part clinical, in part pathological, of a disease constituted by a variety of symptom-groups; sometimes met with, as is said, sporadically; sometimes in widely distributed epidemics. The best known of the "sporadic" symptom-groups is infantile paralysis—"acute anterior polio-myelitis." The *epidemic* symptom-groups are those of various forms of polio-encephalitis, polio-myelitis, meningo-encephalitis, meningo-myelitis, encephalitis, myelitis, and polyneuritis. The particulate virus is believed to be the same in all cases of the disease. Some writers still dispute the pathological identity of the *common* sporadic type with the epidemic disease. But, in Römer's words, no case of sporadic poliomyelitis has been recorded to which a counterpart cannot be found among epidemic cases; and, further, it is doubtful whether so-called sporadic cases are even *really* sporadic. Abortive associated cases are overlooked, and the "sporadic" homologues of the various epidemic types are diagnosed by the application of other names than that of "Heine-Medin disease." Just so are "sporadic" cases of laryngeal diphtheria oftentimes diagnosed as forms of "croup" unless a fatal issue or pathological investigation determines their real nature.

Epidemics are necessary for the realisation of the pathological unity of diverse symptom-groups due to the same exogenous virus.

Retrospection at the present moment brings to mind the fact that during 1917 a not inconsiderable number of cases were seen, in respect of which a diagnosis of "polio-encephalitis" was either actually suggested or might well have been made. These cases fall into several groups:—

1. Ophthalmoplegias: nuclear, acute, and not syphilitic.
2. "Cerebro-spinal meningitis": not due to any ascertained micro-organism, and sometimes terminating favourably.
3. Encephalopathies, principally in children: beginning with headache, vomiting, and perhaps convulsion, and usually recovering, after a period of drowsiness or confusion, without palsy.

Cases belonging to the first group usually pass as nuclear paralysis of undetermined origin; those in the second as "meningismus" or meningitis; those in the third as "convulsions," constipation, acidosis, and so forth.

Some attempt is now being made to trace and classify the records of these and similar cases. Without doubt, however, cases of these seemingly diverse natures became more frequent in the earlier part of this year, though it was not until the last week of March that one was led to declare that we were then apparently on the eve of an outbreak of cases of polio-encephalitis, *clinically indistinguishable from those exemplified in outbreaks of the Heine-Medin disease.*

Symptomatology.

The cases which led to this conclusion were about ten in number. I exclude one or two dubious examples. Of these ten, two were under my care at the Hampstead General and North-West London Hospital.

One, a healthy girl of 21, was taken suddenly ill and was diagnosed successively by various medical men as suffering from ptomaine poisoning, diphtheria, abscess of the brain, and cerebro-spinal meningitis. She died, unconscious, of bulbar exhaustion, and post mortem it was demonstrated that extensive polio-encephalitis was present (March 7th, 1918).

The other, a boy, exhibited the indications described in THE LANCET for May 4th by Dr. F. E. Batten and Dr. G. F. Still. He was diagnosed as a case of polio-encephalitis, and recovered after about ten days in hospital.

The remaining cases were seen by me elsewhere; but were not directly under my charge. Of them four were examples of ophthalmoplegia, two had facial paralysis, and two had diplopia and nystagmus. All suffered from initial headache, several from initial vomiting, two or three were distinctly "mental" for a time; and all, I believe, have survived.

Since seeing these ten cases I have had the opportunity of seeing at least 40 others, of which some have been diagnosed as "botulism," and others have been thought *not* to be "botulism." *But all correspond to one or other type of the Heine-Medin disease*, as seen in epidemics. Some of these cases have died, others have recovered; the remainder are under observation, and although it is perfectly true that hardly any two of these cases are, or have been, exactly alike, yet, as has been well said, "they all seem to have something in common." They *differ*, because in no two cases are the apparent sites of intensity of the neuropathic processes at work precisely the same; but they appear to resemble each other in the *nature* of these neuropathic or neurotoxic processes. A picture seen of a "typical" case is something impossible to construct. The onset of nervous symptoms, though sometimes sudden and sometimes ingravescent, seems usually to be rapid. I believe it *may be* insidious. Initial pyrexia and headache are frequent, but neither the headache nor the fever always continues; and sometimes there is no pyrexia during the period of precise observation. As in Heine-Medin disease, no age confers immunity, except, perhaps, from diagnosis!

A sudden or rapid onset may be marked by an "attack" or "fit" or a "convulsion," and sometimes, as in cerebro-spinal meningitis due to the meningococcus, there may be *sudden and persistent* unconsciousness. Mentality may be gravely affected, or not at all; but the indications of disturbance of mind range from lack of concentration, emotionalism, confusion, and delirium to apathy, drowsiness, sopor, and coma. Constipation and retention of urine, on the one hand, or total incontinence on the other, may occur. Hypertonia of the limbs passing into extreme rigidity, hypotonia which passes into absolute flaccidity, "cataleptic rigidity," tremors, paresis, and paralysis, are all to be seen in different cases or at different stages of the disease. Apparently there are no nuclei of cranial nerves that always escape, though in particular cases the affection or immunity of particular nuclei may be difficult to demonstrate. It may be pointed out that in Borna's disease of horses (the veterinary analogue of the Heine-Medin disease) the olfactory bulbs are profoundly affected, and that the dry mouth of the present disease (and of botulism too) is probably the result of arrested mouth secretions (fifth nerve), just as may be the "accumulations" of mucus in the naso-pharynx the result of palatal and pharyngeal paresis. Deafness and tinnitus are not uncommon and nystagmus may occur without diplopia. Some patients complain of "loss of vision" as distinguished from diplopia. This may be cortical or perhaps an indication that optic atrophy will follow later on. Not a few patients complain of pains in the limbs, of tenderness, tinglings, and other paræsthesiæ. In some there are indications of loss of sense of position and an ataxic gait, or at least one that is staggery. The various reflexes may be normal, exaggerated, or abolished. *Some cases are of minimal severity.* Rashes, as in New York, have been observed, and, as noted by Draper, amongst the children affected there is quite a number with separated central incisors.

Clinical Types.

It is impossible not to admit that the symptomatology of different cases depends on the *localisation* of the "foyers" of greatest intensity of the morbid processes at work at the time of observation. Hence it is possible to give a kind of topical classification of *single* clinical pictures, and to speak of encephalic cases, ponto-bulbar cases, spinal cases, meningitic cases, and so forth. But in particular individuals the localisation of *foyers* of maximum intensity itself varies with stages of the disease. Meningeal involvement may be late or early; mid-brain affections may be, as in the purely ophthalmoplegic cases, apparently the whole basis of the symptoms throughout the course of the disease; or, again, but a part of a much more widely spread affair; and so on. Hence the difficulties in *precise* clinical classification; not of pictures, but of *cases*. Nevertheless, certain composite impressions tend to emerge; and the more perceivingly are the cases watched the more clear is it that, just as the "types" seem in epidemic Heine-Medin disease have sporadic analogues of which a great part at any rate have the same pathological nature as the epidemic cases, so in the present series of cases are there analogues (I believe homologues) of the various "types" seen in true epidemic Heine-Medin disease. The parallelism is roughly set out in tabular form below.

This table must be regarded as only provisional and illustrative. But it is none the less, I submit, of value. Several points are at once suggested. Why, it may be asked,

Type.	Epidemic Heine-Medin disease.	"Sporadic" analogues.		Present epidemic.
1	Abortive.	"Convulsions," "constipation," "ptomaine poisoning," "acidosis," &c.		Slight cases of various types, meningeal and encephalitic.
2	Spinal, of sporadic type.	Infantile paralysis.		Not recognised (*cf.* text).
3	"Spinal" of transverse and ascending type.	Some cases (*a*) of transverse, (*b*) of "Landry" type.		Transverse myelitis cases, "ascending myelitis" cases, &c.
4	Meningitic cases.	C.-s. meningitis of unproved bacteriological origin.		Meningitic cases.
5	Encephalitic cases.	Polio-encephalitis of Strümpell.	Botulism?	Most of the present cases, including "epidemic stupor."
6	Ponto-bulbar cases.	Polio-encephalitis superior and inferior.		
7	Atactic cases and	Certain cases of toxic polyneuritis. ? Cerebellar cases.		Cases with sensory and atactic manifestations ? Cerebellar cases.
8	Polyneuritic cases.			

if the present disease is Heine-Medin, are cases of the "infantile paralysis" type not being reported? The answer may be five-fold—

1. In Heine-Medin *epidemics* spinal cases of the *limited* "anterior poliomyelitis" type are far from being so numerically predominant as may be thought.

2. Unless the present disease is *recognised* as Heine-Medin, such cases will not be reported.

3. As Heine's classical description shows, in the *acute* stage of infantile paralysis—so-called "anterior polio-myelitis"—there is generalised disturbance and sometimes cerebral convulsions, headache, and so forth. In other words, infantile paralysis, with *permanent* lower motor neuron injury, is oftentimes apparently evidence of *only such damaged tissue as remains after a widely spread affection of parts of brain and cord.* It is apparently only the sites of intensive action that receive permanent injury.

4. If the present disease be indeed Heine-Medin, it is in a few weeks rather than now that we should expect to meet with cases, more numerous than usual, of recent "infantile paralysis"—flaccidity with atrophy; and some of these flaccid atrophies will be then found in children whose "acute" illness attracted attention by reason, not of spinal, but of *encephalitic* symptoms with "asthenia," if at all.

5. Lastly, it must be remembered that it is not proven that "infantile paralysis" (the result of so-called "acute anterior poliomyelitis") is *always* the result of a process pathologically identical, in respect of the virus, with the Heine-Medin disease.

The atactic and polyneuritic groups remain for notice. It is admitted by various observers that these groups are spoken of on grounds of convenience rather than from strictly scientific reasons. But already they appear to have had analogues in London to-day, and elsewhere.

The Question of Diagnosis.

The question now forces itself on us: *Has sufficient care been taken by the employment of strictly scientific and experimental methods, to make certain that none of the cases of so-called Landry's paralysis—none of the cases of cerebro-spinal meningitis in which no pathogenic organism has been definitely implicated—and none of the cases of "toxic polyneuritis"—which have occurred and still occur amongst troops in the field—are examples of Heine-Medin disease?*

It seems certain that it is *not* warrantable to declare, either on purely clinical grounds or because post-mortem changes of a certain nature are not found in certain parts, that a particular case of Landry's paralysis, or cerebro-spinal meningitis, or toxic polyneuritis, is *not* an example of Heine-Medin disease. I am quite aware that distinguished authorities do not agree with this statement, but, given the extreme diversity of the clinical types seen at one time and another in Heine-Medin outbreaks, and given the extreme variability in the intensity and localisation of the changes found post mortem in that disease, it appears to me that the serological and other experimental methods are the only ones on which reliance can be placed in our efforts to determine the proper content of our conception of the disease.

There are certainly three simple clinical methods which may, and should be, generally employed.

(i.) Eduard Müller insists that in acute Heine-Medin disease leucopenia is sometimes present; while recent American authors give other findings. Some investigations are at present being made on these lines and will be reported later. It appears that in Heine-Medin disease leucopenia may be an early phenomenon, but leucocytosis one that is later.

(ii.) In many of the present cases, as in many of the Heine-Medin epidemic cases, the cerebro-spinal fluid shows an excess of protein and some lymphocytosis. In others, especially those with *cloudy* cerebro-spinal fluid, as the Americans have found, there is leucocytosis.

My impression is that these latter findings have relation to the degree and extent of meningeal implication present; and I am not surprised that Dr. Batten and Dr. Still do not report such in respect of their cases.

(iii.) Ophthalmoscopic examination is advisable in all cases in which complaint is made of *loss* of vision.

Summary.

On the whole, it may, I think, be stated with some confidence that there is at present in London (and elsewhere) an outbreak of cases *clinically* indistinguishable from examples of Heine-Medin disease. There is, in a word, *clinical* identity between this outbreak and a Heine-Medin outbreak. Whether there is pathological identity as well; whether there is really such a disease as botulism, simulating some types of Heine-Medin disease; and whether, if so, there are any cases of true botulism now in London—are questions that cannot be answered by appeal to logical, clinical, "pathological," or epidemiological methods, but which depend for their solution on bacteriological, serological, and experimental investigations.

Until and unless these questions are so solved, and their solution is one of widespread and far-reaching importance, the problems of immunisation, both prophylactic and curative, cannot be hopefully attempted. But, at the risk of reiteration, it must be said that two points must be borne steadfastly in mind:—

(I.) It is *possible* that the name *Heine-Medin disease* has been applied to outbreaks which, though clinically identical, or nearly so, may yet be *capable of differentiation* (*a*) biologically, and (*b*) epidemiologically. For (*a*) the Heine-Medin virus may be, biologically, multiple, as is the parasite of malaria, or may occur in diverse strains, and (*b*) the Heine-Medin disease may be propagated in a multiplicity of ways at different times, as is typhoid fever. Hence problems relating to food preparation, food distribution, and food consumption must not be ignored or lightly treated.

(II.) It is *possible* that outbreaks closely resembling those of classical Heine-Medin disease, or some forms of that disease, may be due to virus that is *totally disparate* from the virus of that disease.

If—and there seems no reason at present to dispute it—the "Flexner bodies" *do* represent the Heine-Medin virus, or one phase of it (Rosenow), and botulism is a reality, the latter proposition represents not a possibility, *but a fact.* It then remains to be determined if specific infections or intoxications other than botulismus exist, giving rise to similar clinical pictures.

It may be pointed out that only four acute specific diseases essentially affecting the grey matter of the central nervous system—namely, tetanus, rabies, Heine-Medin disease, and botulism, have been shown so far to be connected with a particulate virus; and, while in certain examples of three of these the clinical pictures may be almost identical, in all four the post-mortem appearances may be so similar *in kind* that for none of them can it be said that they are specific.

A few words on some practical issues may be added.

Need of Collective Investigation.

1. Collective investigation—clinical, pathological, epidemiological, bacteriological, and experimental—both at home and abroad, amongst civilians and amongst the troops in the field, should be instituted at once.

2. Investigation should be retrospective as well, and devoted to inquiry as to the prevalence at home and abroad, during the past year or two, of "sporadic analogues" of the epidemic Heine-Medin types.

3. Inquiries should be specially directed to the presence, past and now, of "sporadic analogues" amongst troops at home and abroad. Attention should be given to the lines of communication of the present disease, in view of the known fact that the Heine-Medin affection tends to be propagated along lines of traffic.

4. Cases under investigation should be for the present, if not segregated, at least subjected to rigorous "bed-isolation"; and particular attention should be paid to all which may represent "abortive" types of Heine-Medin, or other disease found to be prevalent.

Cases of "septic broncho-pneumonia" and gastro-intestinal disorder should be regarded, if anomalous in type, with grave suspicion, especially if leading to a rapidly fatal result.

Treatment.

In respect of individual treatment the following suggestions are made:—

1. Rest and good nursing are essential.

2. Careful cleansing of the mouth and pharynx; and attention to the state of stomach, bowels, kidneys, and bladder are imperative.

3. There is experimental and clinical evidence in favour of early, and at first intensive, administration of urotropin, which, it is believed, may be combined usefully with salicylate of soda and benzoate of ammonia, in free doses.

4. The employment of strychnine is of use in cases attended by bulbar exhaustion, or by paralysis of the muscles concerned in respiration.

5. The application by an atomiser of liquid paraffin to the mouth, nose, and pharynx alleviates dryness of the passages and by lessening foulness diminishes the risk of secondary pulmonary affections. To this end, a drop or two of oil of peppermint, or of izal, may be shaken up with each ounce of liquid paraffin used.

6. Confinement to bed should be prolonged rather than curtailed; and cases "discharged" should be watched, for at least three months, in order that record be obtained of any sequelæ or permanent disability.

Later and More Definite Position.

Since these notes were written the position has become more clearly defined. The present cases, it may be asserted, are cases of the Heine-Medin disease. The outbreak is, epidemiologically and clinically, identical with the great epidemic in New York of 1916. It has been "brewing up" in London since last autumn. All ages are affected, and the cases are of every grade of severity and of every clinical variety. It is of importance (1) that cases occurring in adult and advanced life should not be regarded as varieties of "hemiplegia," "myelitis," "cerebral thrombosis," "uræmia," and so forth, but their true nature recognised; (2) that the profession recognise (*a*) cases with abortive nervous symptoms, and (*b*) "abortive" cases with *no* nervous symptoms.

The disease has three clinical stages:—

(*a*) That of initial illness, with, perhaps, sore-throat; respiratory or gastro-intestinal disorder; headache and fever. This stage may be: (1) so trivial that it is overlooked at the time; (2) such as to attract attention and treatment as "influenza," and so forth; (3) so severe that it is *fatal* in a day or two. Sometimes nervous symptoms occur in *this* stage.

(*b*) A latent period that may be very short (24 hours or less), or prolonged to perhaps a fortnight or even more.

(*c*) The stage of definite nervous symptoms. This stage may be: (1) absent or (2) "abortive," (3) rapid or (4) *sudden* in onset, (5) "paralytic" or (6) "non-paralytic," (7) so consecutive to (*a*) as to appear clinically a part of it, or (8) so removed from (*a*) (by (*b*)) that connexion is not at first considered by the medical man. Abortive nervous cases are quite common, and I have seen some diagnosed as "functional." But it is very difficult to say (1) how many cases occur without nervous symptoms, and (2) how many immune carriers there be.

The disease is communicable, *especially in the stage called "a."*

Abundant literature on the subject, for the most part under the caption "poliomyelitis," is to be found in the American periodicals for 1916–17. There are excellent clinical papers in the *Journal of the American Medical Association*, the *American Journal of the Medical Sciences*, and the *Archives of Pediatrics*. There is a valuable paper with bibliography by Haynes in the issue of the last-named publication for June, 1917; but the latest book available is Draper's monograph entitled "Acute Poliomyelitis," and published by Heinemann in 1917.

I desire to acknowledge very gratefully the information, advice, and helpful criticism freely given me by my friend Dr. L. W. Rajchman, of the Bacteriological Laboratory, the London Hospital.

ON THE PHYSIOLOGY OF "FUNCTIONAL PARALYSIS" OF "VOLUNTARY" MOVEMENT,

WITH A DESCRIPTION OF A CASE OF INVERSION OF THE KIN.ESTHETIC SENSATIONS.

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MANY soldiers who have undergone great stress, especially that associated with "shell shock," suffer from "functional" and "psychic" disorders. It is to the paralyses of the limbs numbered amongst such abnormal conditions that we wish to draw attention.

Notes of Case.

[Some experiments upon animals were first described.[1] Then followed an account of a case seen within an hour of onset of "functional paralysis" and kept under observation for 35 days. This man received a severe shock from a stroke of lightning which struck the ground within 10 yards of the hospital tent in which he was lying recovering from dysentery. Space does not permit of the detailed account being given beyond the following description of treatment and its results and of inversion of the kinæsthetic sensations.]

On the twenty-fifth day he was placed under chloroform narcosis. [It was explained to him that we were simply going to examine his movements, and that the effect might be (even probably would be) to improve them. We are indebted to Captain Fraser, R.A.M.C.(T.), for aid in giving of narcotic.]

Before commencement his left limbs were stiff—extensor rigidity—as usual. He was told to blow away narcotic and count after each blow. At stage at which his words became slightly incoherent left upper limb was still very stiff. He was told to move it, and although he made great effort he failed to move it more than before narcosis. When depth of narcosis was increased he was told to bend left knee, and did so quite strongly. The lower limb was quite flaccid at this depth in narcosis. He was made to continue movements whilst depth of narcosis was diminished, and finally (when completely conscious) was shown that he was using left lower limb normally.

The depth of narcosis was increased again. Left arm was now rigid (extensor rigidity). At a certain depth of narcosis, on passive flexion of arm at elbow, there was great resistance (due to contraction of extensors), but this broke down suddenly under passive pressure—just as it does in extensor rigidity of decerebrated cat. At this stage analgesia on both sides of body. When told to move left arm he did so freely but weakly. The depth of narcosis was then diminished until he was completely conscious. He was made to continue movements of arm until he was completely aware of their execution. As he came out of the narcosis rigidity of left upper limb returned. Analgesia persisted on left side of body, although it disappeared on right side.

This treatment was repeated, and when narcotic was finally stopped rigidity of left limbs was much diminished and their phasic movements much increased in amplitude. He was put to bed and given opium. He moved left upper limb freely in sleep, and when he awoke could move it readily.

Next day movements of left upper limb were normal, although weak. There was no abnormal rigidity of left limbs. He walked well, bending the left knee and swinging the left lower limb. There was, however, no change in left hemianæsthesia and hemianalgesia and subject still appeared to fail to recognise, through kinæsthetic sensations, passive movements of left limbs, while he stated that he could not feel his left arm moving when he performed a "voluntary" act with it.

On the twenty-seventh day the improvement in the movements of the left limbs was found to be marked.

For the first time, when shown an object and then (his eyes having been covered) told to touch it with left hand, he did so with fair accuracy.

On examination of kinæsthetic sense (eyes being covered) he appreciated passive movement at radio-ulnar, elbow, and shoulder-joints of left upper limb, *but when told to imitate the passive movements of the left upper limb with his right he always gave a movement of opposite sense to the passive one.* Thus he imitated a passive *flexion* of left elbow with active *extension* of right. He correctly imitated amplitude of passive movement. Precautions taken disposed of possibility of subject wilfully misleading us.

With eyes kept covered he was told to point with his right hand to his left after each of a number of passive movements of left upper

[1] We use the terms "postural activity" and "phasic activity" (or "non-postural activity") in the senses already given to them by one of us. A *phasic activity* of a limb may be defined as one during which the angles between the bones are constantly changing (increasing or decreasing) at all or at some of the joints. The movement is conditioned by changing degrees of contraction and relaxation of the muscles of the limb. A *postural activity* is one in which no movements of the bones relative to each other occur at the joints, but in which the limb is held in a certain posture by a maintained contraction of the muscles. It is conditioned by unchanging degrees of contraction and relaxation of the different muscles of the limb. In many acts there may occur postural activity at some joints and phasic activity at other joints of the same limb.

limb. He pointed to a spot in space diametrically opposite to that to which left hand had been moved. If he was told to point (and keep pointing) with his right hand to his left during passive movement of left upper limb, his right hand moved in a line opposite to that in which his left hand was made to move—i.e., movement of right hand was approximately mirror-image of that of left hand.

This curious reversal of kinæsthetic sensations (as interpreted by subject) lasted from 9 A.M. to about 6 P.M. Steps taken to correct it by training were quickly successful and the appreciation of active and passive movement at radio-ulnar, elbow, and shoulder-joints (in last case in direction extension-flexion only) became absolutely normal, fine and accurate. No training was given for kinæsthetic sensations which accompany movements of rotation and abduction-adduction at left shoulder, but these soon were normal.

On the thirty-fifth day patient had (for administrative reasons) to be sent to another hospital.

He then could walk normally and well. "Voluntary" movements of left upper limb were normal at shoulder, elbow, and radio-ulnar joints, and were of normal amplitude (although still weak in strength) at wrist, metacarpo-phalangeal, and interphalangeal joints. The "voluntary" movements at left hip and knee were normal, weak at left ankle, still weaker at toes. Kinæsthetic sensations apparently normal for all movements at left shoulder, elbow, radio-ulnar, and hip joints. He could recognise extreme flexion or extension of left wrist as movement, but could not distinguish between the two. Recognition of passive movement at left knee, ankle, and toe joints was defective, but he could point fairly accurately with his left heel in "heel-to-knee" test. Nevertheless, the left hemianæsthesia and hemianalgesia were still as complete and profound as at commencement of condition. Left plantar reflex still feebly flexion in type; right markedly flexion, normal. Abdominal and epigastric reflexes now brisk.

This case presents certain points from which theoretical conclusions may be drawn.

In the first place, it must be noted that the "paralysis" of the limbs did not appear immediately after the shock. The first thing to appear was the slowly spreading "numbness" in the left upper limb, and it was only when that limb was completely "numb" that the "paralysis" appeared somewhat suddenly in it. The paralysis was at first a flaccid one, but was succeeded by a state in which the limbs showed rigidity.

As long as the kinæsthetic sensations remained absent the return of "voluntary" power to the left limbs was a slow one. The arm was usually held in a rigid posture. The gait was "functional." When, under a certain form of treatment, "voluntary" movements were much improved, this improvement was almost at once accompanied by reappearance of appreciation of kinæsthetic sensations. When once this had reappeared a further and rapid improvement of the "voluntary" movements occurred. But this reappearance did not cover whole of affected limbs; failure of that appreciation still persisted for movements at joints of left toes and fingers and (to a less extent) for movements of left ankle and wrist. It is just at these joints that the "voluntary" movements were least fully re-established.

"*Functional Paralysis.*"

The question which we wish to try to answer is this—Can this condition of "functional paralysis" be described in physiological terms? If such a physiological analysis can be made it is obvious that the treatment of these cases may be placed on a rational basis. The first point for attack is the question of the "voluntary" paralysis; the second is that of the curious state which underlies, for instance, the exhibition of "functional gait."

These "functional" disorders are of various types. According as one class of symptom is more evident than another (or according as the observer is the more biased for the recognition of one type of symptom rather than another) they may be classed as "sensory" or "motor." Thus we have the functional anæsthesias or hyperæsthesias, analgesias or hyperalgesias, and the functional abolition or depression of the kinæsthetic sensations; functional disturbances of vision, hearing, smell, and so on; and we have also the "functional" paralysis of the limbs, aphonia, mutism, &c.

It is not within our province to catalogue these various disturbances here. What we wish to draw attention to is this: "Functional paralysis" is, at any rate very often, accompanied by functional disturbances (depressions) of sensation. Thus the functional paralysis of a limb is almost always (if not even always, as Purves Stewart states) accompanied by anæsthesia or analgesia of that limb, or by both together. "Functional aphonia" is often, if not always, accompanied by anæsthesia or hyperæsthesia of the mucous membrane of the pharynx and entrance to the larynx. Functional dumbness (mutism) is often accompanied by deafness; and it is curious that in this condition, as Oppenheim states, phonation may be possible—for the subject may be able to utter the first, and even the second, syllable of a word, but yet be unable to complete it.

The results obtained in experiments upon animals may usefully be recalled here. The monkey in which a limb is de-sensitised makes no "voluntary" use of that limb. In probably an exactly comparable sense to that in which we use the term for these human patients, it suffers from "functional paralysis" of the limb.

The "motor" mechanism of the cerebral cortex becomes inactive in that part of it which is cut off from the centripetal ("sensory") nerve-impulses of the part of the body the movements of which it subserves. But the mechanism itself remains a workable one.

This is no mere hypothesis, but an observed physiological fact. These impulses (and especially those of them which arise in the end-organs which are stimulated by the movements of that part of the body itself) play back upon the cortical mechanism, and in their self-engendered activity probably help to keep that mechanism in working order. To use a rather loose (but well understood) expression, we may say that there is probably a sort of "cortical tone" which is kept at a suitable pitch by the centripetal impulses which play on the mechanism. We may picture those impulses (especially the self-engendered proprioceptive ones) as, in their continued being, keeping low the resistances which lie in the paths of the impulses which condition activity of the mechanism.

[It is significant that in the "functional paralyses" these proprioceptive impulses are so often inert in consciousness. In aphonia the impulses from the pharynx and larynx may be regarded as proprioceptive. In mutism there is often concomitant deafness, and the cochlear branch of the eighth nerve is, in a sense, the proprioceptive nerve for spoken speech. The subject hears his own speech, just as he is aware of the movements of his own limbs through the proprioceptive nerves from the muscles.]

Theory of Causation.

Our suggestion is this: The so-called "functional paralyses" are secondary to the anæsthesias (in the widest sense) of the parts affected.

Just as in the monkey, "functional paralysis" of a limb follows the destruction of the afferent nerves of the limb, so in man a "functional paralysis" follows a depression of the sensations of the paralysed part of the body (especially, perhaps, if this depression affects the self-engendered sensations). The case which we have described very strongly suggests that this is so. The first appearance of the "paralysis" *after* the "numbness" of the arm, and the longest persistence of it just in those parts of the upper limb in which the kinæsthetic sensations longest remained abolished strongly support our view.

It may be objected that the "functional paralyses" tend often to persist *after* the resolution of the anæsthesias, but this would hardly invalidate our view. For it may well be that long disuse of the cortical mechanism has made it relatively inexcitable to the impulses which normally play upon it.

Recapitulating this, before proceeding to our next point, we may say that it is possible (or physiologically probable) that the cutting off from a part of the cortical mechanism of the normal impulses engendered by the movements of that part of the body which it activates conditions a disuse of the mechanism—as it were, reducing its "tone" and making it less excitable than usual. There thus results the "functional paralysis" of the part of the body activated by that part of the cortical mechanism, and in our view that "paralysis" is conditioned in a secondary manner by the reduction in value of the sensory impulses or by the abolition of their effect upon the cortical mechanism—in short, by the anæsthesia. Into the manner in which the sensory impulses are reduced in value we cannot enter here.

[It is possible to suppose in physiological terms that a complex of centripetal nerve impulses of very great number and intensity, having a maximum effect on the cortical mechanism and still further increasing in value, overflows and activates other mechanisms the normal threshold to activation of which is high (such other mechanisms being perhaps those the activity of which—on the psychological side—is associated with emotional experience). The manner in which these other mechanisms are then affected may well in part be conditioned by previous similar great centripetal complexes. Their high threshold having been once broken through the path may be rendered so easy a one that, when the complexes of centripetal impulses fall again to normal intensity, they effect and activate this other mechanism more easily than the usual cortical one, which thus remains denuded—"paralysed." This is, of course, pure hypothesis—an attempt to give a *possible* explanation in physiological terms.]

"*Functional Gait.*"

A question of interest is the explanation of the so-called "functional gait" and of the curious rigidities of the limbs.

In the act of progression we may recognise two main types.

In the first place there is the rapid and facile progression of the running man. This form is perhaps best seen in the man who is swimming "like a dog." There the *phasic* movements of the limbs are at their relative maximum, the *postural* factor at its minimum—for the weight of the body is borne by the water.

In the second place there is the slow and difficult gait of the man who bears a great weight. The phasic factor is at its minimum, the postural at its maximum. The man uses his lower limbs as props with a minimum of movement.

As has been shown by one of us, *cortical reactions are characterised by their phasic nature; those of the red nucleus by their postural.* Electrical stimulation of a motor point of the cortex cerebri usually conditions a movement of a limb, and this movement is usually not maintained throughout the whole of the period of stimulation unless the stimulus is very strong. But the movement elicited by electrical stimulation of the red nucleus is pre-eminently a maintained one, and is continued long after the withdrawal of the stimulus; in short, it is a "postural" movement or activity.

Progression itself is fundamentally a spinal activity. It is probably modified in the phasic direction by the activity of the cortical mechanism and in the postural direction by the activity of the red-nuclear mechanism.

We would say that the running or swimming man is moving more cortically (if the cortical mechanism plays an influence other than the starting and the stopping of the act), while the man walking with a heavy load is working more through the red-nuclear system. That system is the older of the two. The early progression of the child—the lower limbs working with minimum of movement and maximum of posture—we would suggest to be activated in great part through the red-nuclear system. It is the system perhaps fundamentally (that is, apart from practice by use) the most easy of activation. Thus, when the cortical mechanism in "functional paralysis" is with difficulty activated by all these centripetal impulses, which also subserve what we may term loosely "the desire to walk," the red-nuclear system still lies open to them and progression—of the stiff "postural" type—is conditioned.

It will be remembered that even in the monkey with a "de-afferented" limb that limb may occasionally be held stiff in progression. In the chimpanzee, in which the "arm area" of the cerebral cortex has recently been destroyed along with the adjacent part of the post-central gyrus, it may also be so used. In man, who suffers from a "functional paralysis," accompanied by loss of kinæsthetic sensation in a limb, the centripetal impulses from the proprioceptive end-organs still pass up the central nervous system. Although they do not affect consciousness they may yet play upon the *red-nuclear* system—perhaps even more strongly than is usual. They may thus serve to keep that system in "tone."

It is not only in progression that the red-nuclear mechanism may play a part.

If the self-engendered impulses from a limb, being cut off in some manner from the cortical mechanism, render it "paralysed" there are yet other impulses which should normally activate that mechanism. If they can at the same time affect the red-nuclear mechanism they may still continue to do so, and even to a greater extent than is normally the case. This, if it is so, may be the physiological explanation of the conditioning of the rigidities of the limbs apart from progression) in the "functional paralyses" and of the ability of the subject to maintain his "paralysed" limb in a posture into which it is set, although he cannot of his own "volition" move the limb into that posture.

Question of Treatment.

We think that this discussion has more than an academic interest and is of direct reference to the treatment of such cases.

In the first place we would remark that in the well-developed case of "functional paralysis" the condition itself is probably due to an abnormal exaggeration of a normal manner ("postural") of holding and moving the limbs. This manner has been made more easy—has been facilitated—by use, and that it is assumed by the subject is conditioned by a relative difficulty in activating the cerebral ("phasic") mechanism. That relative difficulty is in its turn conditioned by the failure of certain centripetal ("sensory") impulses to rise above the threshold of the cortical "motor" mechanism. And that failure of the centripetal impulses is again conditioned by some other factor. The "postural" state is, as it were, a bad habit.

On rational grounds it is obviously best to treat the condition as early as possible and before this abnormal state has appeared or has become fixed and facilitated. The obvious treatment should be one which lowers the threshold of the cortical mechanism. That can perhaps be done in the first place by increasing the value of the impulses which play upon it (Is this how "suggestion" works?)and, when the mechanism becomes activated by them, by facilitating the mechanism by practice. But in our view the primary condition is the anæsthesia, and when this is resolved the cortical mechanism will also be facilitated by the playing upon it of impulses which are ineffective in the state of "functional paralysis." (Does "suggestion" also play a part here by increasing, as it were, the intensity of these impulses until they cross the motor threshold and then lower it constantly by their passage?)

In any case, we wish to emphasise that in such cases of "functional paralyses" the most striking thing, the gait and the postural movements of the limbs, are probably but the symptom of a symptom, and must be treated as such.

SMALL-POX ACCOMMODATION IN CORNWALL.—At the last meeting of the Sanitary Committee of the Cornwall County Council a letter was read from the Local Government Board urging the committee to reconsider the question of providing small-pox accommodation in Cornwall. It was decided to inform the Board that unless it was made obligatory the committee did not consider the matter sufficiently urgent to spend £1000, which was the estimated expenditure for such isolation. The medical officer of health stated that one-third of the population of Cornwall was unvaccinated.

MASTOID DISEASE IN THE BALKANS:

SOME NOTES ON DIAGNOSIS.

BY J. ARNOLD JONES, M.B., CH.B. MANCH., F.R.C.S. EDIN.,

TEMPORARY CAPTAIN, R.A.M.C.; AURAL AND LARYNGEAL SURGEON TO BRITISH FORCES IN MACEDONIA.

THERE are two diseases—one of them incidental to this campaign, the other incidental to Macedonia—which may complicate in most puzzling fashion the diagnosis of suppuration in the temporal bone: the first trench fever, the second malaria.

Trench Fever.

Early in 1916 I met with two cases in which trench fever caused me to open the mastoid process of the temporal bone, in each case to find it innocent of suppuration. Both cases were identical, they came into hospital within a day of each other, and I opened both on the same day. I shall briefly describe one case:—

On admission patient complained of severe pain and marked tenderness over mastoid process of one temporal bone; onset sudden, symptoms present about a week. Feeling of general malaise; no other symptoms. No history of previous ear trouble. Temperature and pulse normal.

On examination tympanic membrane normal in appearance; no deafness, thus showing middle ear was unaffected. Very marked tenderness on slight and deep pressure over mastoid process.

I came to the conclusion that the case resembled two rare cases seen in England in children in which a transient inflammation of middle ear had proceeded, viâ aditus ad antrum, to antrum itself, thence to cells of mastoid process, to be there localised in form of definite abscess, while inflammatory process in middle ear cleared up. There being no special urgency, and knowing the rarity of the condition I had diagnosed, the patient was confined to bed for further observation.

On the second day after admission evening temperature rose to about 101° F. Presence of pain and very marked tenderness over mastoid process, rise of temperature, and absence of any other discoverable cause for that temperature, decided me to operate. The mastoid cells and antrum were opened and found normal. No abnormal appearance of periosteum or soft tissues. Incision was sewn up.

The subsequent course of events showed that the case was one of trench fever, which was diagnosed by the late Major C. H. Benham, R.A.M.C., then in charge of the medical division of the hospital. Mastoid pain and tenderness were much less marked after operation. Recovery was uneventful.

It would seem that the condition of the mastoid process in these two cases must have been analogous to that of the tibia, which is so commonly met with in trench fever. As this disease has become rare since the days of early occupation of Macedonia, I have met with no more cases.

Malaria.

Malaria in the Balkans takes on protean aspects. A sudden rise of temperature frequently occurs in men suffering from suppurative otitis media, or during convalescence after an operation on the temporal bone, but, as a rule, this was easily traced to its proper source. In the following example, however, the presence of malignant malaria, coexisting with a suppurative lesion of the temporal bone, gave rise to great difficulties in diagnosis.

In July, 1917, a patient was transferred from another hospital to this hospital under my care. He complained of pain and discharge in right ear, of several weeks' duration, and attacks of vertigo on much movement. Ear operated on five years ago.

On examination it was at once apparent that a radical operation had been done. Slight purulent discharge from antro-tympanic cavity, epithelial lining of which had broken down in deeper portion. Slight mastoid tenderness on pressure. Temperature and pulse normal. On syringing with warm boric lotion vertigo, with nystagmus to affected side, was elicited in a few seconds, pointing to erosion of external semicircular canal.

The patient was confined to bed and a daily antiseptic toilet instituted. His career was uneventful for the next four days.

On the fourth day he complained of pains in hypogastrium and round loins; urine normal. Captain H. Fraser, R.A.M.C., in charge of the medical division, saw him with me, but could find no definite disease. Next morning T. 101·4° F., P. 84. The abdominal pain remained, and he complained of severe headache. The aural symptoms remained the same. Captain Fraser again saw him with me; possibility of malaria discussed. Blood film negative. Quinine sulphate, gr. xxx., by mouth during day. He was examined for optic neuritis with a negative result. Next day T. in region of 101°; headache more intense. As Captain Fraser could find no positive cause for symptoms, except general suspicion of malaria, and there was obvious lesion of temporal bone with signs of active suppuration, I decided to operate. Before doing so, acting on Captain Fraser's suggestion, quinine (gr. 18) was given intramuscularly.

At operation some deeply situated mastoid cells were discovered, unopened previously, containing pus and granulations, also fistula of external semicircular canal, which was left severely alone. Middle and posterior fossæ of skull were exposed and examined with negative result. That evening T. 103·6°. For two days it remained high, and on evening of second day after operation rose to 105·2°, P. to 118, and

R. to 40. Another blood film proved negative to malaria. Next morning T. dropped to normal, P. to 90, R. to 24. Another blood film taken; rings and crescents found.

On a course of quinine, given intramuscularly and by mouth, he recovered. As regards temporal bone, recovery was uneventful, and he was evacuated to hospital ship some four months after operation with practically dry antro-tympanic cavity.

The difficulty in this case lay in the fact that the patient had a local lesion of the temporal bone which *did* account for the symptoms of pain in ear, mastoid tenderness, and vertigo, and which *might* account for the acute signs superimposed—i.e., headache, rise in temperature, and increased pulse-rate. But the symptoms and signs obviously due to the local lesion had been present for several weeks, and did not increase in severity with the rise in temperature. Nor were there any additional signs pointing definitely to intracranial complications or an acute labyrinthitis. At the same time the hypogastric pain and pain in the back suggested another cause. Malaria was, of course, suspected, but in the absence of pathological confirmation I think one had to tackle the only obvious lesion present. In any case the operation on the temporal bone would have been necessary, but had no acute symptoms presented themselves I should have advised his evacuation to England for that purpose.

A PRELIMINARY NOTE ON GRAPHIC RECORDS OF MUSCLE REACTION.

BY G. M. LEVICK, M.R.C.S., L.R.C.P. LOND.,
FLEET-SURGEON, ROYAL NAVY (RET.); MEDICAL OFFICER IN CHARGE OF ELECTRICAL DEPARTMENT, MILITARY ORTHOPÆDIC HOSPITAL, TOOTING.

As a practical method of recording muscle response to electrical stimulus I submit the following as by far the best yet tried.

It is an adaptation of clockwork recording drum and air tambours for use in electrical department, by which the character of response in selected muscle can be recorded on paper as graphic tracing in pen and ink.

The stimulus used is invariably one of indefinite duration—i.e., closing contraction of galvanic current, obtained by means of a metronome, and contraction of muscle is obtained by longitudinal method. It will be found convenient to regulate the metronome so as to get about 40 interruptions per minute.

It does not matter what the periods of interruptions are, so long as pen has time to record straight line of relaxation before rise of each contraction.

The illustrations explain the matter better than words.

FIG. 1.—Affected side.

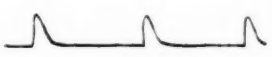


FIG. 2.—Normal side.

Contractions of tibialis anticus in complete R.D., following division of external popliteal nerve.

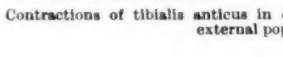


FIG. 3.—Affected side.

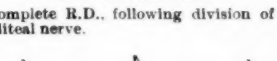


FIG. 4.—Normal side.

Contractions of tibialis anticus in partial R.D., in case recovering from compression of external popliteal nerve. Voluntary power has just returned in ext. longus digitorum. (Slanting upstroke of normal tracing is due to lever of myograph not being horizontal.)

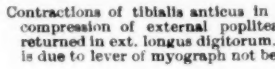


FIG. 5.—Affected side.

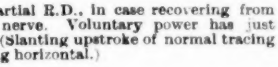


FIG. 6.—Normal side.

Contractions of deltoid recovering from nerve compression, with weak faradic response, and improving but very weak voluntary response. Now almost normal. Response to galvanic stimulus appeared to eye quite normal, but comparison with Fig. 6 shows fine shade of difference.

This note will be followed shortly by another, including a description of a myograph transmitter which I am trying to perfect by experiment.

My reason for publishing this rough sketch of the subject so soon is that I hope it will be of use, even as it is, to those working in electrical departments of military hospitals, and that they may be induced to take it up. There are, however, these facts to be borne in mind: it needs considerable practice to enable good and consistent records to be made; if the instrument is satisfactory, failure will almost certainly be due to want of skill.

The great advantage of this method is that periodical tracings can be made, say monthly, on the same piece of paper, each tracing immediately under the last; thus the nature of response in a muscle can be followed, and in cases, for instance, of compression the surgeon will have a much clearer idea of whether to leave the nerve alone or to operate than he could possibly get in any other way.

As a lot of time will be needed to take records of many cases going through a large electrical department, it would seem advisable to depute the work to a suitable operator, who would thus by constant practice become expert and reliable.

There are many particulars of technique to be acquired, some of which will be mentioned in the more detailed description to follow.

MENINGOCOCCUS AGGLUTINATING SERUM:

A METHOD OF INCREASING THE YIELD FROM THE RABBIT.

BY A. S. GORDON BELL, M.R.C.S., L.R.C.P. LOND.,
TEMPORARY MAJOR, R.A.M.C., OF THE CENTRAL CEREBRO-SPINAL FEVER LABORATORY;
AND
MISS I. M. HARMER,
OF THE CENTRAL CEREBRO-SPINAL FEVER LABORATORY.

IN October last it became evident that the necessary supply of rabbits for the production of diagnostic meningococcal serum was going to be difficult to keep up, especially in view of the increasing demand for these products.

Up to that date the method elaborated by Major T. G. M. Hine was followed and no change has been made in method of preliminary injections. Under the system then in vogue 2·5 c.cm. of serum was produced per 100 g. rabbit weight. The death-rate of rabbits is high, partly on account of toxicity of organism, partly from necessity of using only young animals (from 1000 g.–1400 g.), these alone producing a satisfactory quantity of agglutinins.

As up to nearly half a litre of serum is issued per month, it was felt imperative that the quantity yielded per rabbit should be increased. Various methods were tried, but none gave satisfactory results, the most promising being injection of peptone into peritoneal cavity a few hours before killing. The resulting exudate of serum contained agglutinins in fair amount, but unfortunately titre of blood serum was lowered correspondingly—a case of robbing Peter to pay Paul.

Description of Method.

The following method of intermittent bleeding was finally devised. Intermittent bleeding with large animals is a commonplace, and for the method to be justified with an animal the size of a rabbit the gain in serum obtained must be considerable and the time taken inconsiderable. The writers claim to have achieved these results.

The following is the new procedure. On the eighth or ninth day after first injection, when rabbit shows titre of 1 : 400 the rabbit is bled, 20 c.cm. being taken from ear. This yields about 14 c.cm. of serum. This operation is repeated next day, and animal killed on following day. The titre for agglutinins tends to rise, though the rise is but slight in this case and not invariable, the highest titre of a series being generally at second bleeding. The blood when animal is killed is often milky in appearance, but this does not interfere with its agglutinating properties.

By the above method the serum yielded per rabbit is doubled, but if it is desired to obtain more after the second bleeding an injection of dead cocci is given. This dose must be very much smaller than that injected before or the animal will probably die. After five to ten days' interval the animal may then be subjected to a further series of bleedings.

This method tends in the case of the meningococcus, but by no means invariably, to introduce group agglutinins, and must be used with care.

A further advantage of the method is that that most annoying of accidents does not happen—i.e., killing an animal when its agglutinating curve is on a downward grade and finding oneself left with a sample of serum of 1 : 200 instead of 1 : 400 titre. The writers invariably test each sample of blood immediately it is drawn, so that they know early next day whether to proceed or to stop and give further injections.

The technique is as follows and should be followed accurately, otherwise the operator will find himself taking half an hour to extract 10 c.cm. of blood:—

Shave outer side of ear on hairy or lower edge—i.e., the margin not generally used for injections. A large vein is thus laid bare, which puncture proximally to entrance of branch vein with splinter of glass from a broken microscope slide; this splinter should, if possible, have a spicule which fixes vein and prevents it rolling to one side. Then warm ear by holding it near carbon filament lamp. In this way a test-tube can be filled in five minutes. We have obtained 90 c.cm. of blood from five animals in 26 minutes—this example is merely quoted to show the time taken by this method.

Give the rabbit a warm bran mash after bleeding and keep it for a couple of hours in a box heated with an incandescent carbon lamp, and

bed down with plenty of straw. Treated like this a rabbit remains lively and does not even lose weight. The following figures are remarkable, but illustrate the point. The titre of this serum was high and never varied—i.e., 1 : 800.

Date... ...	Jan. 19th.	20th.	21st.	22nd.	23rd.
Weight ...	1550 g. ...	1580 g. ...	1600 g. ...	1610 g. ...	1600 g.
Blood taken	15 c.cm.	12 c.cm.	12 c.cm.	21 c.cm.	14 c.cm.

Rabbit still lives.

We have ventured to publish this method, which is both rapid and effective, as the scarcity of animals renders the productivity of serum of real importance. In any serum in which the question of group agglutinins is not of paramount consideration, quantities much in excess of those mentioned may be obtained. With us a 1500 g. rabbit gave 125 c.cm. of highly specific serum of a titre of 1 : 1200, and this could probably be exceeded. We may state that although we supply large quantities of normal serum per month no animal has been killed in the laboratory in the last 10 weeks for this purpose, it having been procured by this method of bleeding.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON 28 CASES OF RUPTURED GASTRIC ULCER AMONGST SOLDIERS WITH TWO DEATHS.

BY CHARLES E. MURPHY, F.R.C.S. IREL.,
CAPTAIN, R.A.M.C.; SURGICAL SPECIALIST, MILITARY HOSPITAL, CANTERBURY; LATE EMERGENCY SURGEON, ROYAL HERBERT HOSPITAL, WOOLWICH.

THIS series of cases occurred in soldiers aged from 28 to 43; none had ever served in Army before present war. In every case (with one exception) the teeth were carious; in 20 cases there was marked pyorrhœa. In 20 cases there had been a definite history of dyspepsia; in no case any hæmatemesis.

Twenty-three cases were diagnosed as acute upper abdomens, presenting all the cardinal symptoms. Four cases were diagnosed as acute appendicitis, the appendix incision being used for drainage. In 24 cases period between rupture and operation was 5 to 13 hours; all recovered. The 2 fatal cases had been ruptured 16 and 23 hours respectively; both died of general peritonitis. One case ruptured 21 hours recovered.

In all cases a purse-string suture of silk was put in round the ulcer; this was drawn together and the ulcer invaginated and a few Lembert's sutures over this to guard against leakage. In 3 cases the ulcer was so large that a piece of omentum was sewn down over it as a precaution. The site of rupture:—

In 18 cases on anterior wall near lesser curvature.
" 6 " " " greater "
" 3 " posterior "

In 25 cases the peritoneal cavity was well irrigated with saline infusion. In 2 cases the soiling was slight, and it was deemed wiser not to irrigate. In all cases (except 4 opened as appendicitis) a stab drain was made over pubis and a large tube put in, and in every case a large tube was placed down to site of rupture.

The incision used was ¾ inch to right of middle line either through rectus muscle or the muscle was retracted outwards. In no case was a gastro-enterostomy attempted, as the writer is convinced that it greatly adds to severity of operation, valuable time is lost, and it often may make the difference between life and death. Fowler's position and continuous saline were used in every case. Nothing was given by the mouth for 48 hours.

For permission to publish these cases I am indebted to Colonel R. J. S. Simpson, C.B., C.M.G., A.D.M.S., Woolwich District, and Lieutenant-Colonel M. O'D. Braddell, O/C Military Hospital, Canterbury.

A PLASTIC OPERATION FOR APPARENTLY LENGTHENING AN AMPUTATION STUMP.

BY S. ALWYN SMITH, D.S.O., M.D., CH.M., F.R.C.S.ED.,
MAJOR, R.A.M.C.; O.C. ORTHOPÆDIC DIVISION, WELSH METROPOLITAN WAR HOSPITAL, WHITCHURCH; CONSULTING SURGEON, PRINCE OF WALES HOSPITAL, CARDIFF.

I WISH to draw attention to an operation that may be of utility to surgeons working in hospitals where stumps are prepared for artificial limbs. It is applicable to short above-elbow stumps, and also to amputations of the thumb just distal to or through the metacarpo-phalangeal joint.

With regard to short above-elbow amputations, it is very necessary to have at least two inches of stump to fit in the bucket if a working arm is to be of use. The alternative is a hanging arm, which may or may not have an elbow-flexing device actuated by movements of the sound arm. This is never so satisfactory as an above-elbow artificial arm whose elbow movements are produced by abduction of the stump in the bucket. To this end I have suggested and practised an operation which shortens the axillary folds and thus apparently lengthens the stump.

Cpl. G—— was admitted to the Orthopædic Division of the Welsh Metropolitan War Hospital in August, 1917, with a high humeral amputation at the left side. Length of stump from anterior axillary fold was ¾ inch: movements of stump poor; inability to abduct more than 30°. I sent him to the Prince of Wales Hospital for Limbless Sailors and Soldiers, Cardiff, where Messrs. Blatchford, the limb makers, assured me that nothing except a hanging arm could be fitted.

A few days later the operation was performed. An inverted horse-shoe incision was made into the axilla, the stems of the incision being made well within the confines of the axillary space, to obviate the resulting scars being pressed on by the artificial arm later. The stump was abducted by an assistant, and the insertions of the pectoralis major in front and the latissimus dorsi behind were divided distally for about one-half of their extent. The divided portions of the insertions of these muscles were tucked inwards and upwards, and stitched into position by means of chromic catgut. The stump was now well abducted, and on account of the shortening of the axillary cavity the skin came together easily, the U being replaced by Y.

The available stump has been increased to 2 inches, and the patient wears an ordinary Blatchford A.E. arm, and has full control over the elbow movement.

I have since done the same operation in two other cases with equally satisfactory results. The same course has been taken in a disarticulation through the first metacarpo-phalangeal joint. Here a division of the adductor transversus pollicis and a plastic rearrangement of the skin gave sufficient stump to enable a "thimble" thumb to be fitted, which proved very useful as well as ornamental.

NOTES ON A CASE OF BOTULISM.

BY W. CAREY, M.B. EDIN., L.R.C.S. EDIN.,
HOUSE PHYSICIAN, QUEEN MARY'S HOSPITAL FOR THE EAST END, STRATFORD, LONDON, E.

A CASE of botulism has recently come under my care at this hospital and may be worthy of record:—

The patient, a single woman, aged 30, was admitted into hospital on April 10th. She had always enjoyed good health till three months previously, when her father died suddenly. At the end of March she began to show signs of extreme weakness, lassitude, and apathy, which gradually developed into drowsiness. The patient is well developed. The closest investigation failed to trace her illness to food infection. There was no vomiting, but obstinate constipation. Temperature normal; tongue brown and dry; no dysphagia; urine normal; heart and lungs normal. Nervous system: Lies in a listless, apathetic, semi-comatose condition; eyes closed, and vacant facial expression. She answers when spoken to. Tip of tongue (when protruded) turns slightly to the right. No rigidity of muscles of neck or abdomen. Tremor of both hands. Knee-jerks diminished in right leg and absent in left leg. Immediate contraction of muscles of both legs on tickling soles of feet. Slight spasmodic movements of both legs frequent. Eyes: Double ptosis, pupils not dilated, react to light, slight photophobia, movements of eyeballs normal.

Since admission the patient has remained in much the same condition—perhaps the ptosis is less marked, and she appears to answer questions more intelligently. The appetite is very good and she has no difficulty in swallowing solid food. The tongue is still brown and dry, and the temperature varies from 97° to 99·4° F.

THE SALARIES OF POOR-LAW DISTRICT MEDICAL OFFICERS.—At the last meeting of the Stratton (Cornwall) board of guardians it was decided to increase the salaries of district medical officers by 25 per cent.—The Helston (Cornwall) board of guardians have increased the salary of their district medical officers by one-third.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ODONTOLOGY.

Infections of Mouth in Relation to those of Gastro-intestinal Tract.

A MEETING of this section was held on May 6th, Mr. J. H. BADCOCK, the President, being in the chair.

Dr. NATHAN MUTCH read a paper on Infections of the Mouth in their Relationship to those of the Gastro-intestinal Tract. He said that almost every organism which had been identified in the bowel in health or disease had been found also in the mouth or in the food ingested through the mouth. At all times any factor, such as alteration in diet, digestion, or motility, which changed the conditions in the intestines, modified also the bacterial balance.

When acidity was excessive the duodenum and jejunum were sterile or contained small numbers of strongly acid-resisting yeasts. When gastric hydrochloric acid was very low the number and variety of jejunal organisms were greatly increased, most of them being saprophytes. Anaerobic bacteria were unusual in these regions. At lower levels stagnation allowed the destruction of the majority of these bacteria by the minority which found the environment fitted to their free multiplication.

Parasitic strains of bacteria, arising from dental defects and swallowed, might infect the mucosa and prolong constitutional disease for years after the restoration of the mouth to health, as occurred in the case of rheumatoid arthritis.

The causal bacteria of chronic intestinal infection were able to live on living or dead tissue; when conditions in the tissues were adverse they continued as saprophytes on the surface; when the exudates and residues were unsuitable for growth, the race was continued amongst the tissues, so that infection continued until both environments became unsuitable at the same time. This rarely occurred spontaneously, and natural cure was uncommon. Infection, either in the mouth or intestine, depressed the general tone and favoured increased invasion at the other focus. For this reason improvement was effected in buccal infections by treatment of the bowels and *vice versa*. Buccal and intestinal infections were also treated sympathetically through the specific immunity mechanisms of the body as, for instance, diarrhœa might be induced by an overdose of a dental vaccine.

One of the commonest pathological species to establish chronic infective foci simultaneously in the mouth and intestine was *Streptococcus pyogenes longus*.

In comparison with bacteria of the *B. coli* group the numbers of streptococci were small, but under conditions of disease they might increase greatly until they became the predominant colonic aerobes, in extreme cases replacing the colon bacillus almost completely. Some streptococci showed an extraordinary rate of growth in dextrose media (glycophilic), others showed only slight acceleration or none (aglycophilic).

Factors favouring streptococcal growth in the digestive tract were:—

1. Local delay was the primary factor. With a delay of six hours, fast-growing cocci increased 4000-fold. In health delays of this degree occurred only in the colon, and perhaps occasionally in the stomach. In the latter site food was plentiful but growth was prevented by the acid of gastric juice. In the colon food was scarce. In chronic intestinal stasis delay of six or more hours commonly occurred in the lower coils of ileum. Partial obstruction, as by adhesions, bands, or cicatrices in other portions of the small intestine, or dental abnormalities or unclean habits produced similar zones and delay in the higher parts.

2. Considering the lower ileum and colon only, *deficient assimilation of food in the upper parts of the digestive tract* was the second essential factor. The more easily digestible the food and the greater the efficiency of mastication, the poorer were the residues upon which the ileo-colonic flora could rely. The products of meat proteolysis induced much more rapid growth than did the products of casein digestion. Slides were shown exhibiting the relative growths of *B. coli* and streptococci when growing together, and it was shown that the proportion of streptococci to *B. coli* in the fæces was diminished by excluding all carbohydrates from the diet, whereas it was increased by the free addition of cereals, or more artificially by the administration of lactose and a saline aperient before breakfast. Although a rich nitrogenous basis was required for streptococcal growth, the presence of carbohydrates was needed for its dominance over members of the *B. coli* group.

The pathogenesis of chronic streptococcal infection of the intestinal tract was then considered.

The harmful influences which determined the first departure from health were those which gave rise to chronic intestinal stasis and thereby produced secondary foci of stagnation. Unless carbohydrate digestion was impaired members of the *B. coli* group became the dominant aerobes, and the density of their infection had been proved to be roughly proportional to the degree of ileal delay. If much carbohydrate reached this region *Streptococcus fæcalis* became dominant. When protein digestion was also faulty pathogenic long-chained cocci, which formerly passed through and died, began to collect and multiply. The densest stream of harmful streptococcal strains flowed from the mouth of patients suffering from infections of the teeth, gums, tonsils, nose, and pharynx. From centres of saprophytic growth in the chyme of the ileo-cæcal region long-chained cocci invaded the mucous membrane and so opened up new channels for their dissemination in the tissues, where they continued life as parasites, exchanging their strife against rival bacteria for one against the defensive processes of the body. Mouth infection again aided them by inducing negative immunity phases from time to time, and thus allowing them greater opportunity of establishing themselves in the mucosa, and they then spread upwards, invading the jejunum or even duodenum, and downwards to the colonic mucosa. Organisms streamed from the infected mucosa along the lymphatics to the neighbouring glands, where cultures could be secured even from patients who showed neither pyrexia nor diarrhœa. Alimentary and systemic infection with streptococci, often glycophilic in nature, were associated with a great variety of minor and major gastro-intestinal disturbances, muscular rheumatism, rheumatoid arthritis, slight and severe anæmias, chronic ulcerative endocarditis, and chronic nephritis of mixed type, &c.

Local treatment of the mouth infections could do much to benefit a great variety of morbid states, but derangements in the lower parts of the alimentary tract imposed strict limits to the degree of improvement which could be effected in this way. The gains which could be secured were:—

1. Improved mastication, which diminished the richness of the residues reaching the ileo-cæcal region.
2. Eradication of buccal sepsis, which (*a*) raised the general resistance; (*b*) prevented periodic depression of specific resistance; (*c*) eliminated invasion of the blood stream by bacteria and toxins from the infected areas of the mouth; (*d*) put an end to massive invasion of the intestines by swallowed bacteria.

The rational treatment of chronic infective conditions of the digestive tract, such as chronic streptococcal disease, was to attack the mouth infection vigorously by local measures, but at the same time to employ every possible therapeutic measure, whether diet, drugs, operation, massage, or vaccines, for the correction of the lesions in the stomach and intestines.

Major H. P. PICKERILL said that as the result of experiments on animals he had found that the prolonged elimination of the glosso-pharyngeal reflex had had the following effects:—

1. The animals died within six months.
2. Their weight = ¼ to ½ that of the controls.
3. Starch and calcium were excreted in excess.
4. The salivary glands were undeveloped (in ratio to bodyweight).
5. The animals developed a polyneuritis, from which they apparently died.

Post mortem there were gastric lesions, ulcers were constant, and there was dilatation and pyloric stenosis.

He had injected endotoxins and exotoxins from the human mouth into the jugular veins of rabbits, and found that endotoxins produced a rise of blood pressure and exotoxins a fall of blood pressure. He had administered daily by the mouth 1 c.cm. of broth culture from carious teeth to rabbits. This was followed by malaise, anorexia, and diminished defæcation, as was shown by human beings with oral sepsis and stasis. He thought the explanation was something as follows: The ingestion of non-acid and alkaline substances was followed by glosso-pharyngeal depression, and this in turn by diminished alimentary secretion, oral and intestinal stasis, toxic absorption and sympathetic nerve stimulation, intestinal dilatation and viscous scanty saliva. In this way a vicious circle was formed which could start at any point.

Mr. F. N. DOUBLEDAY also took part in the discussion, and Dr. MUTCH replied.

CLINICAL SECTION.

The Pedicled Bone-Graft in Ununited Fracture of the Mandible, Illustrated by Cases.

A MEETING of this section was held on May 10th, Surgeon-General H. D. ROLLESTON, the President, being in the chair.

Mr. PERCIVAL P. COLE showed nine cases to illustrate the results of bone-grafting in ununited fracture of the mandible. The cases included examples of free transplants from tibia and rib, and several treated by the author's method of employing a pedicled graft derived from the lower jaw itself.[1] The cases were inspected, and the results obtained were regarded as very satisfactory. Mr. Cole, in describing the operation devised and practised by him, made it clear that a thick, well-nourished bone fragment could be detached from the basal margin of the body of the jaw. The blood-supply of this fragment was maintained through a muscular pedicle, consisting of platysma, deep cervical fascia, and anterior belly of digastric. The longest fragment thus detached measured 4 centimetres. The great majority of ununited fractures exhibited a loss of bone that could be bridged easily by a graft of that length. Hence the operation enjoyed a wide range of applicability. Owing to the undoubted vitality of a graft of this nature results were obtained with more certainty and greater rapidity than by the use of a free bony transplant. Mr. Cole strongly dissented from the view that free transplants failed so frequently that they should only be employed as a last resort. As regards results he had had no failure in cases where pedicled grafts had been employed, and was able to record 70 per cent. of successes in cases treated by free transplants,

[1] THE LANCET, 1918, i., 459.

Reviews and Notices of Books.

I. *The Theory and Practice of Massage.* By BEATRICE M. GOODALL-COPESTAKE, Teacher of Massage and Remedial Exercises to the Nursing Staff of the London Hospital. Illustrated. London: H. K. Lewis and Co., Limited. 1917. Pp. xvi.–251. Price 8*s.* net.

II. *Handbook of Anatomy for Students of Massage.* By MARGARET E. BJÖRKEGREN, Teachers' Certificate, I.S.T.M. Second edition. Illustrated. London: Baillière, Tindall, and Cox. 1917. Pp. x.–233. Price 5*s.* net.

I. During the past three years physico-therapeutics have been tested more severely than at any other period of their history, and many medical men are now, for the first time, compelled to form an opinion of the merits or demerits of the various physical remedies they are called on to prescribe. Five years ago it was unusual to encounter a medical man who had more than the vaguest idea of what treatment by massage or electricity consisted, though he might have prescribed either or both for many years. Fewer still had read a book on these or cognate subjects. Now readers can be numbered by the hundred. It is of importance, therefore, that any book published at this juncture on these subjects should contain nothing calculated to inspire the mind of the casual medical reader with distrust or doubt. This volume on the "Theory and Practice of Massage" is written avowedly for the student of massage, and we cannot help feeling, as we lay it down, that its teaching fails to inspire confidence. The physiological effects of massage, as here described, are unsatisfying to the reader who hopes to learn something of the science of massage; the following chapter on practical massage causes misgiving lest the student should learn a stereotyped method of treatment. The fear is strengthened by subsequent chapters, whose recitations of all the manœuvres of massage in turn as the treatment appropriate to each condition mentioned, leave the impression that each movement has an equally beneficial effect. Thus we read that "running vibrations" should be afforded an equal place in the treatment of such widely different complaints as section of a nerve and sciatica. The value of active movements is duly noted in the earlier pages; in describing the treatment of individual conditions it is rarely emphasised. "Thorough massage ..... with passive movements may do much to alleviate" metatarsalgia; but adequate support and exercises, which are not mentioned, can surely do more. The description of the treatment of acute surgical conditions is reminiscent of days when the value of early massage and movement was unappreciated, being usually left in the hands of the quack. The most conservative of surgeons would hardly maintain the necessity of the slow progress here advocated—e.g., that a bandage should be worn for three weeks after simple dislocation of the shoulder, or that no movement should be prescribed for a sprained ankle until two weeks have elapsed, though treatment "may begin immediately." Again, it is not good to find identically similar treatment prescribed for fracture of the olecranon whether or no operation has been performed. Nor can we agree that treatment for other fractures in or near the elbow-joint should be "much the same as that already prescribed for the olecranon"—a statement potent for evil. At intervals throughout the book tables of exercises are given, and two early chapters are devoted almost exclusively to their description. These should prove very useful to those without previous knowledge of this branch of treatment.

II. Anatomy is taught to the present generation of students of massage by demonstrations in the dissecting-room, when it is available, by lectures and in the classroom. But it is well that there should be at hand a reliable book where can be found just what the students of massage should know, unencumbered by detail that is, for their purpose, superfluous. This "Handbook of Anatomy for Students of Massage" supplies the need exactly. It is for the student of massage what "pocket Gray" is (or should be) to the medical student. Nothing is omitted which should find place; little is included that might have been omitted, nor has clearness been sacrificed to brevity, concise though the work is. The illustrations are taken from Buchanan's "Manual of Anatomy," and are well reproduced. For the sake of future editions we would offer the following suggestions. In the chapter on osteology the muscular origins and insertions should be better defined, and, if possible, illustrated. The study of the muscles and their actions might be rendered easier, first, were italics used to emphasise those that play the chief part in a movement and do not serve merely as auxiliaries, and, second, if a separate chapter were devoted to their study. Were this done we should find fewer of the slips that almost of necessity creep in when tabulating anatomy—e.g., the omission of the biceps as a supinator. No mention is made of the new nomenclature, and, for the most part, the old is adhered to. It is a pity, therefore, that use is made now and then of new terms without attention being called to the fact; thus on p. 30 we find a reference to the extensor ossis metacarpi pollicis, while on p. 34 the same muscle is referred to as the abductor longus pollicis. In Chapter XV. it is disconcerting to find detailed the double nerve supply to the flexor longus pollicis and the triple supply to the flexor profundus, whereas the branches direct from the median to these muscles are rarely well marked. These, however, are minor blemishes in an otherwise excellent volume.

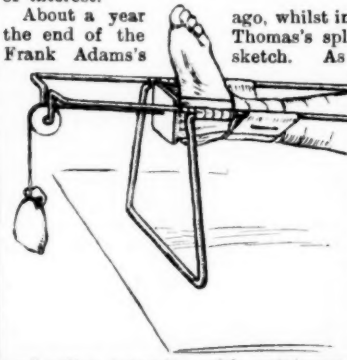
Modern Dental Materia Medica, Pharmacology, and Therapeutics. By J. P. BUCKLEY, D.D.S. Fourth edition, revised. With 146 illustrations. London: William Heinemann. Pp. 494. Price 15*s.* net.

Dr. Buckley is to be congratulated on the issue of a fourth edition of his valuable volume for dental practitioners, which has undergone careful revision. In the first part of the book there is an exhaustive account of the drugs, their physiological action and therapeutics. The second part, which is perhaps the more important, deals with practical dental therapeutics. We have here excellent accounts of the technique involved in the treatment of the diseases of the teeth. Throughout the author insists on proper dental sterilisation, and emphasises the great importance of the teeth as foci of infection. In this connexion he utters a word of warning about unnecessary extraction of teeth, and endeavours to show that the removal of sepsis can often be accomplished by careful attention to details in carrying out operations on the teeth. The reader will find in the pages of this book a fund of information which will be of the greatest assistance in everyday practice.

New Inventions.

CONTINUOUS EXTENSION DURING THE TRANSPORT OF FRACTURED FEMURS.

APROPOS of Captain J. Frankland West's article in THE LANCET of Jan. 12th, 1918, entitled "Apparatus for the Transport of Fractured Femurs," the following may be of interest.



About a year ago, whilst in Bombay, I modified the end of the Thomas's splint as shown in Frank Adams's sketch. As will be seen, the end-piece has been turned downwards through 90° and a pulley attached for weight extension. By this means the indiarubber, or tie-on extensions used during the transport by ship or train could be altered in a few minutes to a weight-and-pulley extension with minimum disturbance to the patient or splint. The pulley was in two halves, which were screwed together on to the end of the apparatus. This is not shown in detail in the sketch. For the sake of clearness the foot-piece is also left out. No originality is claimed for this modification.

B. WHITCHURCH HOWELL, F.R.C.S. Eng.,
Captain, R.A.M.C.
Military Orthopædic Hospital, Shepherd's Bush.

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Vide The Lancet, Vol. I., pp. 89, 322, 684, 1344, *1912*; Vol. I., p. 49, *1914*. *B.M.J.*, Vol. I., p. 262, *1912*; Vol. II., p. 906, *1913*; Vol. I., p. 1236, *1914*. *Medical Press*, Vol. I., p. 377, *1914*.

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For Reports see "BRITISH MEDICAL JOURNAL," January 12th, 1895; August 29th, 1896; "LANCET," January 6th, 1894; March 30th, 1901, and various other medical publications.

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The BRITISH MEDICAL JOURNAL, Sept. 2nd, 1916:—

Re AMBRINE TREATMENT.

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26/10/17. R——

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THE LANCET, June 10th, 1916:—

THE VALUE OF AMBRINE IN THE TREATMENT OF WOUNDS.

"The Minister of War, in reply to the Deputy M. Mons as to why, in view of the marvellous results obtained by treating burns and frost bites with Ambrine at the Hôpital St. Nicolas, all the soldiers suffering from such wounds were not sent there, stated that this was being done as far as possible. ....."

K——,
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Yours truly,
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THE LANCET.

LONDON: SATURDAY, MAY 18, 1918.

Recent Developments in the Army Medical Service.

THERE was at the beginning of the war a feeling in the medical profession, which found reflection and even exaggeration in the public mind, that the services of the medical profession were not being utilised by the country with full intelligence and economy; and, no doubt, there was a period when the feeling was not without justification. But, without attempting to defend or explain away every piece of maladministration that may have occurred, the fact is, in our opinion, established that the enormous difficulties of the Medical Department of the Army were, on the whole, met with promptitude. We have only to think what the situation really was to see that these words constitute high praise of the work done by Sir ALFRED KEOGH and his staff. When the war broke out the establishment of military medical officers numbered certainly under two thousand. Within a few weeks the size of the operations called for three or four times this number of medical officers, and from that date forward the whole story has been one of increasing the Army, and therefore of increasing the number of its medical officers, as the military undertakings of the country spread to various fronts, and as the course of fighting led to grave wastage. The first difficulties being faced, were followed by others as grave.

The demand upon the civilian medical profession soon became so heavy that anxiety was felt in two main directions: first, that there might be a dangerous depletion of the medical men who were under contract by the provisions of the National Insurance Act to minister to the medical needs of the insured; and, secondly, that there might be a shortage of medical men, particularly at those centres at home where, owing to industrial activity in connexion with the war, the population had been enormously increased. The National Insurance Commission have throughout watched anxiously to see that a dangerous point of shortage was not reached in respect of Panel practice, and at the same time the Local Government Board has taken care that the preventive service of the country should not be unduly depleted, coöperating with the Board of Education in the attempt to maintain in the country an efficient body of medical officers for education purposes. The voluntary offers of the civilian medical profession were from the beginning generous, but as each form of conscription for military service was instituted the supply of doctors showed signs of deficiency. The Central Medical War Committee, being constituted with its Scottish analogue and with the Committee of Reference of the English Royal Colleges into a statutory body for the purpose, obtained the position of becoming the recruiting medium between civilian medical men and the War Office, and at the deliberations of this Committee the question was often and anxiously debated as to whether a right use was being made of the civilian medical men who had already received temporary commissions in the R.A.M.C. Particularly was the question acutely at issue whenever the difficulty of obtaining further medical officers became especially great. That the Army already had as many medical officers as it could possibly require, and, indeed, as many as could be spared, was frequently stated, and suggestions of uneconomical use of the material already supplied led to questions in the House of Commons and to articles in newspapers which produced oftentimes the wrong impression, even when some of the facts were right. Official reticence did not improve the situation, and the medical profession was justified, by the attitude of the War Office, in believing that the military authorities did not appreciate the scientific side of medical practice or understand the necessity of employing a limited supply of medical men with all the greater discrimination because it was so limited.

Recent developments in the Army Medical Service should remove from all minds the impression that the military authorities only desire to acquire medical men, and have not yet got so far as to wish to employ them economically. The reconstituted Army Medical Advisory Board has been sitting regularly, with the result that the Director-General, Surgeon-General GOODWIN, who is the President of the Board, is in a position to receive direct advice from recognised medical authorities along all the various channels which have been arranged by the Board. The work of the Board is well designed and is being thoroughly carried out, and it should ensure the receipt by our Armies of the best surgical, medical, and special assistance which the country can afford, while much of this first-class scientific service will also remain at the public disposal. In another direction a practical step has been taken at Adastral House for ensuring that officers in the Royal Army Medical Corps will obtain work for which they are especially fitted. A card index has now been instituted in which every officer's career is being noted, the card forming an officer's *dossier* and his claim for particular employment. On the card there is room for an officer's academic record, a list of appointments held, details of literary or special work performed, and all claims to be allotted to one or other of any special departments. This is a practical answer to the question so often anxiously debated in the Central Medical War Committee as to whether a right use was being made of the civilian medical men receiving temporary commissions in the R.A.M.C. The misunderstandings of the past have for the most part been gradually put right; in the future the peg and the hole should more or less fit from the beginning.

The Physiology of "Functional Paralysis" of "Voluntary" Movement.

IT was a favourite doctrine with CHARCOT and the old Salpêtrière school generally that one of the features of hysteria was its mimicry of organic disease. There was scarcely one motor, sensory, or reflex symptom or sign but had its hysterical counterpart. Paralyses, hyperkineses, amyotrophies, anæsthesias, hyperæsthesias, dysuria, oliguria—all might be hysterical; vaso-motor phenomena, joint affections, cutaneous eruptions, circulatory, alimentary, renal disturbances, not one but might be the expression of the great neurosis. Under the influence of perhaps too rigid a schematisation of the supposed analogies between hysteria and organic disease CHARCOT went so far as to "localise" the "lesion" of hysterical hemianæsthesia in the posterior part of the internal capsule, while the late Dr. CHARLTON BASTIAN[1] not only thus "localised" that defect but assigned its "lesion" to a vaso-motor spasm in that particular area of the cerebral hemisphere. In the fullness of time the pendulum has swung to the opposite extreme, and to-day the multifarious phenomena of that still peculiar condition are being investigated, apparently, along psychological lines alone, sometimes by observers who, to judge by their published work, do not seem to possess, as an indispensable preliminary, a sound knowledge of the facts of organic neurology. Hysteria on its psychical side has been followed up by the psychiatrist and psychologist rather than by the neurologist, with the result that year-long psychoanalyses have taken the place of clinical investigation of somatic data, and objective study of motor, sensory, and reflex phenomena has been ousted by oneiromancy.

More than a decade ago, however, the late Dr. CHARLES BEEVOR,[2] in the course of an inquiry into muscular movements and their representation in the central nervous system, discovered that the characteristic muscular defect in hysterical or functional paralysis was impaired inhibition of the antagonists of a given movement, whereby they contracted before the principal movers; hence, naturally, conflict of movement and apparent "paralysis." One objective fact of this description is worth a ton of theorising, and that not merely from a diagnostic viewpoint. It furnishes an insight into the mechanism of the production of hysterical symptoms and allows a comparison with the data of organic lesion symptomatology which cannot fail to be instructive. Some years ago KINNIER WILSON[3] showed that in certain lesions of the medulla from occlusion of the posterior inferior cerebellar artery the combination of anæsthesia and vaso-motor changes—e.g., absence of bleeding on pricking the skin—bears a close resemblance to what obtains in certain cases of hysteria, and suggested that more light will be thrown on hysteria by study of the mechanism of its symptomatology as compared with that of organic disease than by reversing the process and starting with the "psychical trauma." In this connexion we desire to direct the attention of our readers to a communication on the physiology of "functional paralysis" by Captain T. GRAHAM BROWN and Captain R. M. STEWART, which appears elsewhere in this number of THE LANCET. Briefly, they make the suggestion that the "paralysis" of functional type as we know it is comparable to the "paralysis" of what MOTT and SHERRINGTON[4] called originally the "apæsthetic" limb—i.e., the limb all the posterior spinal roots corresponding to which have been experimentally severed.

Captain BROWN and Captain STEWART have studied the objective motor phenomena of their case closely, and supply evidence in support of their views which is deserving of every consideration. We feel, it is true, that more attention might be given to the difficulty which arises from the fact that not a few cases of functional paralysis are unaccompanied from the outset by any discoverable impairment of sensibility, whereas the essence of the "paralysis" of the apæsthetic limb is precisely the absence of afferent stimuli to the motor centres involved. Further, an analogy from another curious clinical condition might well be borne in mind. It is known that in some cases of organic paralysis from lower motor neuron disease, as in poliomyelitis and facial palsy, the face or the limb may remain flaccid and motionless although the return of normal electrical reactions indicates integrity of the neurons concerned. One of the explanations which has been advanced is that the prolonged muscular inactivity has entailed loss of sensory stimuli from muscular contraction and produced some "functional" defect in the motor nuclei corresponding; until these stimuli can be adequately reawakened by artificial contraction of the muscles the latter remain "paralysed." For this well-recognised, if rare, condition the somewhat cumbrous name of "metaparalytic psychogenic akinesis" was proposed by COHN and EMANUEL.[5] That the condition is "functional" can scarcely be gainsaid in view of the frequently rapid recovery under treatment; in fact, most neurologists, probably, would classify such cases as functional on top of organic. But here comes the point—Is this "functional" state of exactly the same nature as a "hysterical" condition? We are inclined to doubt it. The reader will appreciate the bearing of all this on the interpretation of the interesting case described by Captain BROWN and Captain STEWART, who believe that in it the "paralysis" is secondary to the anæsthesia. In metaparalytic psychogenic akinesis there is "anæsthesia" in the sense of absence of deep sensory stimuli from "paralysed" muscles, whereas in not a few cases of hysterical palsy neither cutaneous nor deep sensory impairment is discoverable. Be this as it may, the investigation of hysterical phenomena on physiological lines receives a welcome impetus from such work as that by Captain BROWN and Captain STEWART, which is deserving of wide publicity, in the hope that it will be added to in the near future.

[1] Hysterical or Functional Paralysis, 1893.
[2] Croonian Lectures, 1903. [3] Brain, 1911, p. 337.
[4] Proc. Roy. Soc., 1895. [5] Neurolog. Centralbl., 1912.

Annotations.

"Ne quid nimis."

THE INTER-ALLIED CONFERENCE ON THE AFTER-CARE OF THE DISABLED EX-SERVICE MAN.

THE Whit-week Conference on the After-care of Disabled Men promises to be a very important affair from more than a ceremonial point of view. The afternoons will be devoted to cinema lectures by British and Allied representatives, while the latter will be given opportunity of visiting Roehampton, St. Dunstan's, Golders Green, Shepherd's Bush, and other restorative centres. The morning programme will be divided into a series of sections dealing with (1) pensions and allowances; (2) training; (3 A) medical treatment, including the blinded and the deafened; (3 B) surgical treatment, the first two sections being by no means devoid of a medical aspect. Dealing with Section 3 A, Lord Charnwood will take the chair in the Grand Committee Room at the House of Commons. Neurasthenia will be dealt with in various aspects by Professor E. Medea, Professor G. Sala (Italy), Lieutenant-Colonel Springthorpe (Australian A.M.S.), and Sir John Collie; tuberculosis by Major P. H. S. Hartley; the blinded by Dr. L. Mondolfo and Sir Arthur Pearson; the deafened by Major Dundas Grant. In the last three cases various allied experts have been prevented from attending. Section 3 B will sit in the Central Hall, Westminster, Sir H. P. Harris presiding, supported by Sir A. Pearce Gould and General Mèlis (Belgium). Italy will contribute to the discussion on the limbless in the person of Captain G. Pieri, Professor V. Putti, Professor A. Pellegrini, and Dr. A. Bassetta, while on the subject of orthopædics in general Sir Robert Jones and Colonel T. H. Openshaw will be supplemented by Dr. M. Stassen (Port Villez), Professor R. Dalla Vedova (Rome), Professor R. Galeazzi, and Dr. Delrez. Functional re-education will be represented by Major W. G. Turner and Major G. W. F. Boyer (Canadian A.M.C.), Major L. Sandes (South African M.C.), Professor A. de Marneffe, and Dr. G. Verga. It is well that restoration should thus have the advantage of combined action on the various fronts.

ANALGESIA BY ORAL ADMINISTRATION.

A PRELIMINARY communication by Captain J. T. Gwathmey (New York) and Captain H. T. Karsner (Cleveland), in the *Journal of the American Medical Association* for April 6th, on the production of euphoria during the dressing of painful wounds by oral administration of analgesic drugs serves to whet the appetite for more information on what appears to be a very important branch of the anæsthetist's work. The report of a case will best illustrate the results claimed.

A soldier, aged 36, who had received a gunshot wound of the right thigh, and had an infected, compound, comminuted fracture of the femur, had found previous dressings very painful, and the splint could not be changed without general inhalation anæsthesia. He was given paraldehyde, 1 fluidrachm; ether, 3 fluidrachms; and liquid petrolatum, 4 fluidrachms. In 15 minutes he fell into a light sleep. The wound was dressed, the splint removed, the through-and-through wound irrigated with ether, a gauze drain inserted down to the femur, and a Thomas splint applied with extension. The patient talked during the dressing, felt practically no pain, and suffered no nausea or other unpleasant after-effects. The dressing was repeated in a similar manner every other day for four dressings, and in none of them was there pain or any alteration of pulse or respiration.

The writers are well known as careful and trustworthy workers, and a further and fuller account of the method will be awaited with impatience. As a possible means of releasing anæsthetists from ward work and enabling them to continue the essential attendance in the operating theatre the suggestion is well worth considering. At a base hospital it would be an inestimable boon to be able to render a patient analgesic without the necessity of inhaling ether or chloroform with the aftermath of unpleasant taste and smell and of some increase in the toxic condition of the patient, which is already a source of anxiety. Unless unforeseen drawbacks arise, the new method should prove of service not only in military surgery but also in civil work. Before, however, we can accurately estimate its real value we must have further information on such points as the length of time taken to eliminate the drugs, the after-condition of the patients in regard to nausea, sickness, the smell and taste of the ether, and their general well-being. At present the ideal method is to give gas and oxygen, and when by the use of a portable, or preferably wheelable, machine the patient can be anæsthetised where he lies, the gain is great in the avoidance of pain or of administering anything of a toxic nature. It remains to be seen whether the oral method of Gwathmey and Karsner will prove a serious competitor to gas and oxygen in dealing with dressings, emergencies, and short operations especially as a means of economising man-power in anæsthetists.

PANEL PRACTITIONERS AND THEIR REPRESENTATION IN PARLIAMENT.

THE General Election to Parliament, on the basis of the new register, will, when it comes, not find the medical profession unprepared. The British Medical Association has authorised the raising of a voluntary fund to assist the candidature of members of the medical profession, and the Panel Committee for the County of London has recently had under consideration the question of establishing a voluntary fund for supporting a candidate for Parliament, with a second point as to whether that candidate should be its secretary, Dr. B. A. Richmond, who has received an invitation to stand for a London constituency. There is little doubt that the Panel Committee has been rightly advised that it cannot use its office and its funds for the purpose proposed, while it would be exceedingly difficult to arrange for the secretary of the Committee to stand as a Parliamentary candidate, and still more for him to take his seat. In the circumstances the Committee has decided judiciously, as probably most of those who consider the subject will agree, to pursue the matter no further and to content itself with advising members of the panel to realise the importance for them of Parliamentary representation. In comment upon this it may be pointed out that medical men whose position enables them to become candidates for the House of Commons are not numerous, and that though such men should secure the support of medical practitioners in most instances, not all of them would have practised under the Insurance Acts, or would have a real and intimate acquaintance with the views of those doing so. It is to be noted, however, that the Panel Medico-Political Union has invited any of its members who are willing to stand to forward their names to its secretary, and that it is proposed that the Union should select six candidates from among these. Such

candidates would, of course, be fully familiar with, and in sympathy with, the policy of the Panel Medico-Political Union, and, no doubt, would be qualified, and prepared also, to advise upon other medical questions if they should obtain seats. The practical possibility of medical candidates obtaining such seats would also be tested by their seeking election. Lay candidates take an interest in varying degrees in medical matters, and are, as a rule, ready and willing to receive information as to topics upon which they are uninformed, but the medical man must always know the medical side of public affairs more intimately. The National Insurance Act is so essentially a measure to be worked by the doctor in behalf of the public that enlightened public opinion and professional opinion should rarely be at variance, and it should be possible to ascertain how far any particular medical or lay candidate is conversant with the working of the Insurance Acts, and likely to prove sympathetic with the views of members of the panel. When this is known there will, however, remain questions of party politics, and of how far these should affect the according of his vote or influence by a medical practitioner. It is not possible to predict accurately the extent to which party politics, upon the old lines to which we are accustomed, will revive at the next general election, but it would certainly not be safe to suggest that they will disappear altogether. As to how far they should affect the vote of a medical man desirous of promoting the interests of his profession it would not be easy to lay down any rule. Individuals must decide according to the strength of their personal convictions and the circumstances in which they find themselves, while the doctor who is a Member of Parliament must always remember that he is there as a medical adviser of legislators and not as the champion of medical interests. Where medical interests can be put forward properly and in the national advantage they will gain in prominence by having all the issues concerned explained to the legislature by a medical voice. None would wish to see medical Members of Parliament indifferent to the importance of questions affecting their profession which at any time may come to the front in the House of Commons; at the same time, it is not to be expected of any profession that its members as a body should treat general political considerations as less urgent upon their attention than professional topics, nor would such aloofness be creditable.

AMENORRHŒA IN WAR-TIME.

FOR some time past in Germany and Austria communications have appeared in the medical press describing an increase in the proportion of women who suffer from amenorrhœa, although within the sexually active age. All the authors of these papers have agreed in attributing such increase to some condition arising as a result of the war, although, as is natural, they have differed as to what particular condition is mainly responsible. Jaworski, who seems to have been the first, singled out under-feeding; those following him mentioned either the same factor, or anxiety, or physical strain. Lately a Berlin gynæcologist, Franziska Cordes,[1] writing from a very large experience in private practice, puts forward two further possible causes. The effect of under-feeding and of mental strain she does not deny, although laying greater stress upon the former, because, according to her, this war amenorrhœa only appeared with the rationing of meat, fat, and sugar, and has since then regularly increased from quarter to quarter. But as the incidence has been greater in winter than in summer it would seem probable that cold and wet have etiological influence. German women having been increasingly exposed to these by their unwonted economic activity. We may adduce in this connexion the frequent suspension of the menses for a time on a change from a warmer to a colder climate—e.g., a winter holiday in the Alps. The second factor to which Dr. Cordes draws attention is enforced celibacy, as to which she recalls that spinsters experience the climacteric earlier than do married women. Most of her amenorrhœic patients were married women, of child-bearing age, whose husbands were at the front, and in a certain number of these resumption of marital relations induced a return of the menses, which is, in the author's experience, an indispensable condition for conception. In the cases resembling early climacteric, besides amenorrhœa there was noticed diminution in size of the mammæ. Strengthening diet being unobtainable, the medicinal treatment recommended is that proper to ordinary amenorrhœa, coupled with massage of the uterus and protection from cold and wet. The State should step in to prevent the "butter polonaises," which are evidently the equivalent of our erstwhile food queues. Untreated, Dr. Cordes fears that the condition might go on to sterility and constitute a serious danger to the desired increase of population.

[1] Cordes: Der Frauenarzt, 1917, xxxii., 246 and 282.

THE NEED FOR SCHOOLS FOR PHYSICALLY DEFECTIVE CHILDREN.

AT a time when comprehensive measures are being carried into fruition to complete the national system of education, there appears to be some danger that the needs of crippled children may be lost sight of. In 1899 the Education (Defective and Epileptic Children) Act gave permission to local education authorities to set up schools for various classes of defective children, including those physically defective. A few of the more progressive authorities took advantage of the powers given to them, but for the country as a whole the Act remained, and so far as crippled children are concerned still remains, a dead letter. Thus, as Mrs. Humphry Ward has pointed out in a recent letter to the *Times*, only 5000 to 6000 crippled children have been provided for in the whole of the country, and of these 4000 are in the special schools of the London County Council alone. A simple calculation shows that the share of the rest of the country should be 32,000 in place of the 2000 for whom provision has been made. The Act of 1914 remedied the position in regard to mentally defective children by making it compulsory upon all local authorities to provide adequate facilities for their education, but ignored the physically defective children who were included in the Act of 1899. This is the more to be regretted inasmuch as all observers are unanimously of the opinion that in the case of the latter the expenditure is fully worth while, whereas there is some doubt as to the wisdom of employing highly trained teachers and elaborate educational accessories for the teaching of the mentally defective. The intelligence of the physically defective child is often above the average and can be trained for skilled employment with conspicuous success; in

the absence of such training the child becomes dependent upon charity in place of becoming self-supporting, and represents a drain upon the community instead of a gain to its resources. It is surely only by inadvertence that the educational needs of the physically defective children in the country have dropped out of sight, and we confidently anticipate that it will be sufficient to bring the facts to the notice of Mr. Herbert Fisher for the omission to be remedied.

"AN OBSCURE DISEASE WITH CEREBRAL SYMPTOMS."

WE publish on p. 714 of this issue of THE LANCET a memorandum from the Local Government Board dealing with "an obscure disease with cerebral symptoms," as the Department entitles the interesting and serious malady which has been recently prevalent among us. This disease has been labelled, for temporary convenience, and with no sense of conviction, "botulism." We express no opinion as to the origin of the malady, which has claimed much attention since Professor A. J. Hall and Captain Wilfred Harris's articles appeared in THE LANCET of April 20th. We have used the word "botulism," as did some of our contributors from the first, to call attention to a particular epidemic, but that epidemic has been variously named already. In our columns this week it is referred to under different names in an article by Dr. F. G. Crookshank on p. 699, a clinical note by Dr. W. Carey on p. 706, and letters by Dr. Farquhar Buzzard, Dr. R. E. Lord, and "L.R.C.P." in our correspondence columns. Convenient as the phrase "the present epidemic" is in order to keep the judgment in suspense while evidence is accumulating, some catchword is necessary if only for indexing purposes and for convenience of reference by readers. The highest common factor of "infective ophthalmoplegia," "toxic ophthalmoplegia with acute asthenia," "toxic bulbar paralysis," "toxic encephalitis," "epidemic stupor in children," "X disease," "central nervous system toxæmia," and even other longer terms, is unity. Perhaps "acute epidemic encephalitis" comes nearest to the desired badge, the title being employed by Dr. Farquhar Buzzard.

POSSIBLE CAUSES OF CONFUSION IN THE DIAGNOSIS OF MASTOID DISEASE.

A NUMBER of possible causes of confusion in diagnosis in mastoid cases are sufficiently familiar, but Captain J. Arnold Jones, in a communication published in another column, has added to them at least one new member. In the course of his military duties in Macedonia as aural and laryngeal surgeon to the British Forces he encountered a case of trench fever which closely simulated mastoiditis, and a case of malaria complicating middle-ear disease and producing an adventitious fever. Malaria as a source of obscured aural diagnosis in one way or another has been described by various authors before, though we think the precise circumstances of Captain Jones's case are probably unique. But as far as we know trench fever as a source of mastoid pain is an entirely new idea. It is of interest, as Captain Jones suggests, in view of the similar pain referred to the shin in this disease. The nearest familiar analogue would seem to be the extreme tenderness over the mastoid sometimes seen in cases of fibrositis, in which there is often also severe pain of a neuralgic type. The usual complications of middle-ear suppuration have been by no means rare among the men of the British Force in Macedonia. We are glad to find Captain Jones endorsing the practice, which has become general under war conditions, of only operating when definite danger signs are present.

THE TREATMENT OF NEURASTHENICS AT GOLDERS GREEN.

AS will be seen by our Parliamentary Report, a proposal to close the Home of Recovery for Neurasthenic Pensioners at Golders Green was made the subject on Tuesday last of a question in the House of Lords by Lord Knutsford, and in the House of Commons by Sir William Collins. The official answer in both cases was to the effect that the Home, on which a large amount of money has been expended, was to be scrapped on the recommendation of the medical advisors to the Ministry of Pensions. The answer is unsatisfactory to the medical profession because the Ministry of Pensions is not receiving advice which many medical men, having every right to speak with authority on the subject, would be found giving; while any reluctance among the pensioners to enter the Home, if such exists, is probably due to an unlucky speech by the Minister of Pensions made at Worcester and reported in the public press, in which he advocated the mixing up of neurasthenic patients with "cheery chaps."

THE house and library of the Royal Society of Medicine will be closed on Saturday, May 18th, and Monday, May 20th, but members of the R.A.M.C. and the other medical services will be admitted.

WE have received this week a copy of the twelfth annual report on "The Results of the Chemical and Bacteriological Examination of the London Waters for the Twelve Months ended 31st March, 1918," by Dr. A. C. Houston, Director of Water Examination, Metropolitan Water Board. Particular stress is laid upon certain economic methods of purification of the water-supply which have been adopted arising out of the demands of war. We shall deal with some of these points later, as they may have an influence on the future policy of water undertakings of considerable pertinence to the public health.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

THE following subscriptions and donations to the Fund have been received during the week ending May 11th:—

	£	s.	d.
Dr. Alfred Cox (monthly)	1	1	0
Dr. J. Cryer	3	3	0
Capt J. Rutter Williamson	1	1	0
Dr. S. Moore	1	1	0
Dr. E. Eyre Lloyd ...	2	2	0
Dr. J. R. Preston	1	1	0
Brigade-Surgeon Lieut.-Col. Salaman, I.M.S.	1	0	0
Dr. J. M. Callender ...	1	1	0
Dr. Marguerite Wilson...	1	1	0
British Medical Assoc. ...	105	0	0
Dr. Mary Carew Hunt...	2	2	0
Dr. D. N. Seth-Smith ...	1	1	0
Dr. I. B. Muirhead ...	3	3	0
Dr. J. F. Blurton	1	1	0
Dr. Norah Kemp	2	2	0
Dr. H. Creemer Cooper..	5	5	0
Dr. Helen Ingleby... ...	1	0	0
Dr. F. Claude Evill ...	2	2	0
Dr. Jas. Middlemass ...	1	1	0
Mr. P. A. Ross...	1	1	0
Col. Charles E. Harrison	3	3	0
South-Eastern Counties Division, Scotland, B.M.A. (per Dr. Oliver):—			
Dr. J. W. Somerville	3	3	0
Dr. S. Davidson ...	2	2	0
Dr. R. Evans	1	1	0
Dr. N. P. Fairfax ...	0	10	6
Dr. W. L. Cullen ...	0	10	0
Dr. M. J. Oliver ...	1	1	0

Monthly Subscription.

Captain Henry L. P. Hulbert, R.A.M.C.	£1	0	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

AN OBSCURE DISEASE WITH CEREBRAL SYMPTOMS RECENTLY PREVALENT:

THE ACTION OF THE LOCAL GOVERNMENT BOARD.

THE following notes have been received from the Medical Department of the Local Government Board, the Department having been alive from an early date to the presence among us of an obscure disease manifesting a certain group of cerebral symptoms. To the notes is appended a schedule which is being issued by the Board to medical officers of health.

MEMORANDUM OF THE LOCAL GOVERNMENT BOARD.

During the last three months a number of cases have been recorded in the medical press and have been notified informally to medical officers of health, the symptoms of which have been described as bearing some resemblance to those of botulism. These and other cases are being investigated by medical inspectors of the Local Government Board and medical officers of health in collaboration with medical practitioners, but it seems advisable at this stage of the inquiry to summarise such records as are at present available. The earliest case is reported to have had its onset on Jan. 26th, and there were two having onset in the week beginning Feb. 10th, and two in the last week of that month. In consecutive weeks in March, 7, 3, 10, and 14 cases came to notice; and in April and the first week of May the corresponding numbers were 11, 19, 14, 16, and 6.

The largest number of cases have been recorded in London, but groups of cases have occurred also in Sheffield and Birmingham, and single cases (and in one town three cases) have been notified from many other parts of England and Wales. The cases occurred among persons having the most varied occupations. No group of cases was associated with a single occupation. In only one instance were there two cases in the same household, and in this instance the second case was very mild and not admitted to hospital.

The cases reported occurred about equally in the two sexes.

Although it is assumed that all the reported cases are of the same disease, this cannot be regarded as certain. Already there is evidence from the post-mortem room that some of the suspected cases were other diseases.

The case-mortality among cases regarded as belonging to the outbreak has approached 20 per cent. It is probable that slight cases have been overlooked.

The following table gives the approximate age incidence of 105 cases, as compared with that of 2559 cases of poliomyelitis notified in recent years in England and Wales.

Age.	Poliomyelitis.	Present outbreak.
Under 10	88·2	14·3
10–20	8·3	24·8
20–30	2·0	15·2
Over 30	1·5	45·7
	100·0	100·0

Three cases occurred in infants in the first year of life, one of them (reported by Dr. F. E. Batten and Dr. G. F. Still in THE LANCET of May 4th) being in a breast-fed infant aged 3½ months. Five were in children aged 1–5, and 7 in children aged 5–10. Of 105 cases of which partial reports are available 64 occurred in persons over 20 years of age.

The clinical records at present available relate to 87 cases, but many of them are incomplete, and it is not certain that in all cases there was paralysis of cranial nerves. Using the terminology adopted by the different observers, the chief symptoms and signs recorded may be summarised as follows:—

Among general symptoms pyrexia was recorded as being present in 41 of the 87 cases, usually in the early stage of the illness; it may have been present in some other cases which were not reported on while in that stage. In 8 cases it was stated that there was no fever. Of other general symptoms headache or localised occipital, temporal, or frontal pain was recorded in 31 cases. Profuse sweating was noted in 7 cases and the presence of erythematous or other rash in 6. Various mental symptoms come next to pyrexia in order of frequency—namely, drowsiness in 29 cases, lethargy in 18, stupor in 13, asthenia in 12, coma in 9; also vertigo in 17 and delirium in 20. Absence of lethargy was recorded in 3 cases, and the presence of restlessness, or irritability, or sleeplessness in 5. Of symptoms referable to partial or complete paralysis of certain cranial nerves, there were recorded bilateral facial paralysis in 9; unilateral in 11; bilateral ptosis in 32 cases, unilateral in 2; ophthalmoplegia in 18; diplopia in 18; strabismus in 10; nystagmus in 9; double third nerve palsy in 6; pupillary dilatation with failure of accommodation in 2; paralysis of the tongue in 2. Affections of speech were noted in 5 cases. Rigidity of the muscles was recorded in 10 cases, muscular tremors in 9, and twitching or jerking of certain muscles of the face or limbs in 6. Among symptoms referable to the gastro-intestinal system obstinate constipation was recorded in 35 cases, vomiting in 10 cases, difficulty of swallowing in 9, and dryness or soreness of the throat in 3. The parotid glands were swollen in 2 cases. Retention of urine was recorded in 15 cases, incontinence in 3. The records relating to the circulatory and respiratory systems are not sufficiently complete for useful summary at present.

Although in a considerable proportion of the reported cases there was a history of the recent consumption of such foods as sausages, sardines, shrimps, lobster, tinned salmon, cheese, bacon, and ham, these and other exceptional foods had not been consumed in the majority of reported cases; and no particular food has been found to be related to the outbreak.

The pathological investigation of the outbreak is being undertaken by the Medical Research Committee. The results so far obtained show no bacteriological evidence of botulism and give no support to the association of the outbreak with infection from food. Further investigations are in progress.

Schedule of Enquiry issued to Medical Officers of Health.

Date of enquiry ..... Officer making enquiry.....
Sanitary District ..... Medical Officer of Health .....

In enquiries into cases of obscure disease with symptoms resembling those ascribed to "Botulism," it is requested that the following schedule may be completed as far as possible and returned to the Medical Officer, Local Government Board, Whitehall, S.W. 1.

1. Name and address of patient .....
2. Age and sex .....
3. Name of medical attendant .....
4. Occupation and address of patient's business .....
   When last at work .....
5. If attending school, name the school .....
6. How long resident in the neighbourhood .....
7. If removed to hospital, state where and when .....
8. Date of onset of symptoms .....
9. Initial symptoms .....
10. For purposes of subsequent analysis it is particularly desirable, where possible, to record observations in regard to the following symptoms:
    (*a*) Fever .....
    (*b*) Lethargy or sleeplessness .....
    (*c*) Ophthalmoplegia—e.g., ptosis or other ocular paralyses .....
    (*d*) Facial and other paralyses .....
    Are they symmetrical or asymmetrical? .....
    (*e*) Stiffness of neck and condition of muscular system .....
    (*f*) Headache, delirium, tremors, or other nervous symptoms ...
    (*g*) Vomiting .....
    (*h*) Rashes (including herpes) .....
    (*i*) Sweats.....
    (*j*) Constipation ..... Retention of urine .....
    (*k*) Pulse ..... Respirations .....
11. Other symptoms and further progress of the case .....
12. Please write "yes" to the heading which corresponds most clearly in your view to the symptoms in this case.
    (*a*) Acute poliomyelitis .....
    (*b*) Cerebro-spinal meningitis.....
    (*c*) Tuberculous meningitis .....
    (*d*) Cerebral syphilis .....
    (*e*) Plant alkaloid poisoning (atropine, &c.) .....
    (*f*) Diphtheritic or other toxic paralyses .....
    (*g*) Food poisoning (Gaertner, paratyphoid B, &c.) .....
    (*h*) Botulism (*B. botulinus*) .....
    (*i*) Some other disease .....
13. Number of persons in the family ..... Number of occupants of the house.....
14. Name any recent illness or indisposition among them which may possibly be regarded as an abortive case .....
15. Note whether any history of sore-throat, influenza, cerebro-spinal fever, poliomyelitis, or other recent illness in patient or member of family or contact with the patient .....
16. Insanitary conditions of the house (e.g., overcrowding, &c.).....
17. Name any illness or indisposition known to have occurred among civilians or soldiers with whom the patient has recently been in contact and when .....
18. Food history of the patient—
    (*a*) Is there any evidence of marked or abnormal insufficiency of food .....
    (*b*) During the week before his illness did the patient on any occasion partake of any article of food or drink which other members of the family did not have? .....
    (*c*) Name the articles of food or drink which the patient had consumed during the week before his illness .....
    (*d*) Is any article of food or drink suspected of being the cause of the illness. If so, on what grounds? .....
19. How many other cases of a similar nature have you observed in the district? .....
20. Results of any blood tests or bacteriological examinations .....
21. Results of P.M. examination .....
22. Remarks:—

Local Government Board, May 15th, 1918.

Correspondence.

"Audi alteram partem."

THE PRIMARY EXAMINATION FOR THE F.R.C.S. ENG.:

AN APPEAL TO THE PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS.

To the Editor of THE LANCET.

SIR,—May I ask the courtesy of your columns for the following appeal?—I am, Sir, yours faithfully,

WILLIAM OSLER.

DEAR MR. PRESIDENT,—All who have at heart the interests of medical students must have been gratified to see in this morning's *Times* the continued (increasing?) high percentage of rejections—82! But must we wait for a total rejection before the College realises the rottenness of the present system? System it must be, dear Makins: for are not the teachers who fail so ingloriously among the best of your Fellows (in anatomy at any rate); are not the examiners, who are so successful, picked men of the same class; and the unhappy victims—well, it seems ridiculous to say so—but are they not our very best students? For results, see the *Times*, 27 rejections out of 34!

In your skill and judgment the profession has unusual confidence. Induce the College to relieve an intolerable situation. Abolish a system which is a reproach alike to teachers and examiners, and worst of all a cruel perversion of mental values to the student at the very time of life when such values count. The alternative? Back to John Hunter:—

1. Do away with the necessity for Fellowship classes.
2. Make the candidates spend the time (now wasted in cramming) in the laboratories and hospitals.
3. Let them come to the examiners' board with proofs of personal study and research in anatomy *or* physiology for the Primary—and, may I add, in pathology *or* surgery for the Final.

Sincerely yours,

Oxford, May 9th. WILLIAM OSLER.

*** By all who have the interests of medical education at heart Sir William Osler's appeal will be endorsed. The fact cannot be got over that the unsuccessful candidates, who are as a lot the pick of the students, have been prepared for the Primary Fellowship by the class which finds them later to have been badly prepared.—ED. L.

ACUTE EPIDEMIC ENCEPHALITIS.

To the Editor of THE LANCET.

SIR,—As most of your readers will have learned from papers and correspondence in your journal, and from a memorandum recently issued by the Medical Officer of the Local Government Board, there is a prevalent epidemic of acute encephalitis, but neither of the above sources of information quite covers the symptomatic field.

I have recently seen and verified post mortem two cases of acute hæmorrhagic encephalitis in adults over 40 years of age in which the clinical picture has included a rapidly progressive hemiplegia and aphasia, associated in both instances with epileptic convulsions, and in one with hemianæsthesia, hemianopia, and optic neuritis. It appears, therefore, that the inflammation may affect any part of the brain and produce a great variety of physical signs and symptoms, according to its incidence. There seems to be little or no evidence in favour of its connexion with any food poison, but further information with regard to the nature of the infective agent is urgently required.—I am, Sir, yours faithfully,

Wimpole-street, W., May 14th, 1918. E. FARQUHAR BUZZARD.

BOTULISM.

To the Editor of THE LANCET.

SIR,—The following appears to be another case of "botulism" arising at about the same time as most of those recently recorded, and occurring in a man of 41, who is in an advanced stage of phthisis and whom I attended two years ago for angio-neurotic œdema:—

From March 31st to April 6th he daily ate sausages, which were purchased on March 30th, and were observed to be of a nasty colour before they were finished. Since that date he has had no food of any description prepared from pig. About April 8th he became much feebler than usual and would not dress or exert himself; his temper also became uncertain. On the 16th he caught cold, followed by much increase in cough and sputum, physical signs of bronchitis, and a temperature varying from 100° to 101·2°. There were some nocturnal delirium, a very foul mouth, profuse sweating, and constipation. These symptoms continued unaltered until early on May 2nd, when right-sided facial paralysis suddenly occurred, the temperature dropping to 97° and remaining after this under 99°. At that time there were no signs of any paralysis of limbs, or oculo-motor muscles, and no ptosis or pupillary alterations, nor was there retention of urine or difficulty in swallowing.

The lethargy has gradually increased to what appears complete unconsciousness, from which he suddenly rouses, though only partially. Slight ptosis of the right eyelid, occasional external squint of one or the other eye, and nystagmus are now present, though the eyes move freely in every direction. There is hypertonia of the muscles of all the limbs, but less of the right arm and leg than of the left, and the right limbs are now paretic. Knee-jerks are increased and there is a tendency to ankle clonus on both sides. Kernig + on both sides. Right plantar reflex is flexor and left extensor. Diaphragm moves well, but there has been persistent hiccough since last night. There are constant clonic movements of the left arm and hand. The fundi, which were examined to-day by my partner, Dr. H. Nuttall, are normal.

I am, Sir, yours faithfully,

Colwyn Bay, May 6th, 1918. ROBERT E. LORD.

PS.—The patient died 36 hours after the preceding notes were written, the only additional symptoms being difficulty in swallowing which appeared late on May 6th, and retention of urine which necessitated catheterisation on the 7th.

EPIDEMIC STUPOR IN CHILDREN.

To the Editor of THE LANCET.

SIR,—Time alone will determine whether the four instances of the symptom-complex characterised by stupor observed by Dr. F. E. Batten and Dr. G. F. Still, and recorded in THE LANCET of May 4th, "justify the conclusion of a new disease of epidemic origin." That the onset, duration, and symptom incidence of disease processes in general are changing so as to render clinical diagnosis obscure and frequently impossible is unquestionable, and many common instances might be cited—i.e., the alteration in the type of rash of measles. It is reasonable to assume that this change of bodily reaction to disease is due to three main factors: (1) The introduction of new bacterial strains from all parts of the globe; (2) the absence of natural immunity; and (3) lowered resistance from restricted diet.

In five cases, four of which were female children, of similar nature occurring under my care and conforming to no standard of group symptoms, the bacteriological investigations during life being nil, two proved at the post-mortem examination to be tuberculous meningitis, one pneumococcal leptomeningitis, and the remaining case acute miliary tuberculosis, the last-named presenting the clinical picture described by Professor A. J. Hall in THE LANCET of April 20th as the asthenic type of toxic ophthalmoplegia.

I am, Sir, yours faithfully,

May 6th, 1918. L.R.C.P.

SERUM TESTS FOR SYPHILIS.

To the Editor of THE LANCET.

SIR,—In THE LANCET of May 4th, in a timely leading article under this heading, you summarised some of the factors involved in the standardisation of the Wassermann reaction. As a firm believer in the desirability of such standardisation I should like to draw attention to one additional consideration.

The technique employed in this laboratory fulfils the conditions laid down in the excellent report issued by the Medical Research Committee. Quantitative results are obtained by varying the amount of patient's serum employed. Until the middle of last year each test included five different dilutions of serum, and the results were recorded by noting the amount of fixation produced in each tube. With the increased material and the improved clinical records available under the scheme now in force it was felt that more strictly quantitative results were desirable, especially in the direction of records of the upper limits of strongly positive reactions, since, by any method involving the use of only a few tubes, this limit is not reached in a considerable number of cases. We have therefore modified our technique by adding to the tubes employed in each test, so that the dilution of patient's serum varies from 1/7·5 to 1/960. This involves putting up nine tubes, including the serum control, but to economise the reagents a preliminary test is carried out using the serum control and the tubes containing the 1/7·5 and 1/120 dilutions. This divides the serum into negatives, positives, and strongly positives, and the intervening or additional dilutions are then tested to obtain the exact dilution which produces the result regarded as

standard. In our case this is the complete fixation of 2½ M.H.D. of complement previously determined by titration in the presence of antigen. Three M.H.D. are actually employed, and the tube showing half hæmolysis is chosen as standard; or, as more usually happens, the dilution required is calculated from the readings obtained from two tubes, by a method similar to that advocated by Dreyer and Inman[1] for reading agglutination results. Upwards of 1000 sera have now been tested in this way and the results recorded, and to some extent tabulated. Only once has a serum produced the standard result in a dilution greater than 1/1000, but sera showing a titre by this method greater than 1/500 are fairly common. The effect of treatment, or of its too early cessation, is clearly observable in repeated tests, and figures have been obtained with regard to early cases, untreated cases coming under observation at a late stage, and other matters which promise to be of considerable value.

It is my personal belief that there are sound theoretical and practical reasons in favour of obtaining quantitative results by progressive dilution of the patient's serum, but many workers of great experience prefer to vary the amount of complement, while a few vary the amount of antigen. The relative merits of these methods is clearly a matter for impartial consideration and decision. If it be objected that any such method involves the employment of too large a series of tubes and too great an expenditure of time, it can, I think, be answered that in a laboratory where a large number of tests are carried out as a routine on certain appointed days, these objections lose much of their significance, since by suitably arranging the day's programme little extra time is needed, nor should an objection on this ground be allowed to stand, unless the additional work involved is so great as to be impracticable.

I would like strongly to urge that, in addition to a standardised method for diagnostic purposes, a standard for quantitative records should be set up. Such a standard should be so arranged that the *maximum* strength of reaction is recorded in each case, and a reasonably accurate measurement of such strength should be provided for. If any such method could be agreed upon, it should be possible within a comparatively short time to have at our disposal a very large mass of data which, when correlated with the clinical findings, should enable us greatly to increase the accuracy and certainty of interpretation of the test and to understand better the significance of many of those borderline reactions which are met with from time to time, and which may lead to so much difficulty.

It would probably be sufficient, at first, if a standard technique were adopted which could be modified along stated lines to allow accurate quantitative results to be obtained and recorded in a uniform manner, the simpler readings being accepted for diagnostic purposes. If only a reasonable number of workers recorded their results on a standard scale, so that they could be readily coördinated, the desired end would be attained.—I am, Sir, yours faithfully,

W. W. C. TOPLEY.

The Department of Pathology and Bacteriology, Charing Cross Hospital, May 10th, 1918.

THE ARMY MEDICAL SERVICE AND MEDICAL PROGRESS.

To the Editor of THE LANCET.

SIR,—May I invite attention to certain reforms introduced in past years into the Army Medical Service which have, in my opinion, tended towards technical medical efficiency in the profession at large?

1. The Army Medical Service introduced the "double medical qualification" in A.D. 1860 and thus linked together the physician and surgeon classes of medical practitioners. Before that date any medical man could be "nominated" for the Army Medical Service on the strength of a single qualification in either medicine or surgery. The profession as a whole followed the Army example after many years' delay and the "double qualification" is now the rule.

2. Public competition was introduced for the Medical Service of the Army in A.D. 1860 and private patronage ceased. The R.N. Medical Service followed suit, as likewise the Indian Medical Service. At the present moment private nomination is in force for the Colonial Medical Service and the Prison Medical Service and other minor groups. In my opinion candidates for such services should compete in the Army medical examinations and be granted appointments in these smaller services only if they pass the *qualifying* standard for the Army. By this proposal I practically desire to make the existing Army Medical Entrance Examination into a qualifying *State* examination for the whole profession of medicine. This standardisation is greatly needed in view of the many universities and colleges now appearing, each with its varying standard of efficiency.

3. *Sanitary training.*—Since A.D. 1860 every entrant into the Army Medical Service is given a sanitary course of lectures for several months on joining. Educated by these courses two great streams of trained sanitary medical officers have gone out over the Empire to preach sanitation through our foreign garrisons, and in a special manner to awaken India through the Indian Medical Service. It would well repay the State to endow, either fully or in part, the hygiene department of our Medical Schools and Colleges, and so reduce to a very low rate the financial charges for sanitary training of medical men, for which students now have to pay. Practically no scholarships or exhibitions exist for the public health students. I regard this as a lamentably retrograde condition of affairs.

4. *Secondary examinations.*—All military medical officers have to pass a *secondary* examination about their tenth year of service, and provision is to a certain extent made to prepare these officers for such an examination. One day this secondary course at the tenth year of medical life will be a common duty laid on all medical men, and grants in aid of the cost will come from the coffers of the enlightened State. It will well repay the expenditure by developing the efficiency of the medical men.

5. Finally, the Army Medical Service, once broken up in petty regimental groups, has become a centralised corps. It wants but little imagination to see that a similar centralisation will in a measure come upon the civil medical profession, and the cry for a Minister of Health is the visible mark of this unifying spirit. The Poor-law doctors will be linked up with the panel services and the school doctors will also join in, and one day the county medical officer of health will become the medical director of the county—controlling and coördinating all the various county medical groups under one medical administration. His position will be like the principal medical officer of an army now called the Director of Medical Services. Nothing can prevent this certain unification. Into it the Panel Medical Service will no doubt one day lapse.

It will thus be seen that the Army Medical Service has passed through a series of changes, all of which have tended towards its higher efficiency, and now we await to see very similar improvements made in the organisation of the civil branch of the profession of medicine.

I am, Sir, yours faithfully,

GEORGE J. H. EVATT, M.D.,
Surgeon-General (retired).

Junior United Service Club, May, 1918.

[1] Dreyer and Inman: THE LANCET, 1917, i., 365.

MEDICAL SERVICE AND THE QUESTION OF COMPENSATION.

To the Editor of THE LANCET.

SIR,—The question of a State Medical Service is one which the profession may have to deal with, at no distant date; the appointment of a Ministry of National Health is definitely promised. Unless the future of the medical profession is fully considered now, we may have to accept in the future circumstances whatever terms the Government of the day offer.

Since 1914 many men have qualified and entered the services. Some "recognition" of their work will be made, but they cannot all be absorbed at one time by general practice. Many will be prepared to accept service under the Government, at a reasonable salary, and the establishment of them in a State Medical Service would be a "recognition" which would be detrimental to the interests of the older practitioners. Surgeon-Major J. F. Gordon Dill, at the meeting of the Royal Society of Medicine last month, outlined a scheme which was published in THE LANCET of April 20th. In many respects it is similar to one which I formulated last year, but there are a few points with which he did not deal. Major Dill's scheme provides that "no personal interests must be adversely affected." That is rather vague. In my opinion, the first essential to a State Medical Service is that present practitioners *must be compensated*. Every man has a proprietary right in his own practice. It is a marketable commodity. If we become State servants we will lose our proprietary right, therefore we ought to receive compensation for the loss of that right. The compensation should be not less than one year's purchase.

Major Dill suggests a pension after 25 years' service. That may be all right for future generations of practitioners, but what about the men who have been already 25 years in practice? Surely it is not intended that they should spend the next 25 years in Government service before a pension is due to them! These men, in the past, have worked harder than the future State servants will have to work, and if they are to be compulsorily retired are as much entitled to their pension now as the young men will be 25 years hence.

The financial arrangements mentioned by Major Dill, if adequate, would perhaps be satisfactory to future men, but not to the present generation of practitioners, unless the time they have already spent in practice is regarded as "the

length of the medical officer's service." Every man who is taken over by the State is entitled to an income equal to his present income, although it might be agreed that if compensation is paid, and the years spent in general practice are allowed to count towards the pension, a rate of salary due to a man with that number of years' service would be accepted.

I am, Sir, yours faithfully,

D. FENTON, M.B., Ch.B. Edin., D.P.H. Vict.

Blackburn, May 12th, 1918.

THE PREVENTION OF MEASLES MORTALITY.

To the Editor of THE LANCET.

SIR,—I should like to congratulate Dr. R. King Brown on having the courage to point out (THE LANCET, April 27th) the doubtful desirability of attempting to prevent the spread of infection of measles after a certain age. All we can do is to lower the mortality of measles by guarding children under 5 years from the infection, and putting all patients under hygienic conditions. There is little doubt that in an industrial community almost every individual will be exposed to and contract the infection of measles sooner or later, and although I am not convinced that the severity is more severe after the age of 15, there is no doubt that the mortality is at the lowest between the age of 5 and 15, and that it is more economical for the disease to be contracted before the age of 12. The amount of economic waste due to the continued attempt through school and adult life, to prevent the infection of certain mild diseases, such as mumps and varicella and of severe diseases like measles and whooping-cough (the continued prevention of which is impracticable) is immense, and is well deserving of investigation with a view to limitation.—I am, Sir, yours faithfully,

SIDNEY DAVIES,

Woolwich, May 8th, 1918. Medical Officer of Health.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary meeting of the Council was held on May 9th, Sir George Makins, the President, being in the chair.—Sir Alan Reeve Manby, M.V.O., and Colonel Sir Robert Jones, C.B., A.M.S., were introduced and after signing the by-laws and making the required declaration were admitted Fellows of the College.—Mr. J. G. Turner, F.R.C.S., L.D.S., was introduced and the President handed to him the John Tomes prize for 1915-17, together with a document declaratory of the award for his work on the subject of dental pathology.—Miss E. M. Rooke was introduced, signed the roll of Begley Students, and the President handed her the first year's payment of her studentship together with a document certifying her appointment as Begley student.—The President reported that he had appointed Mr. D'Arcy Power as Bradshaw lecturer for the ensuing year.—In accordance with the report of the Court of Examiners diplomas of Membership were granted to 103 successful candidates.—A letter was read from Sir L. A. Selby-Bigge, K.C.B., offering to present to the College a bust by Chantrey of John Scott, F.R.C.S., a member of the Council of the College from 1844 to 1846, together with a pedestal. The offer was accepted with thanks.—Mr. Waring reported that he and Mr. Hallett had attended at the Privy Council Office on April 17th to give evidence as the representatives of the College before the Dentists Act Committee.—The secretary reported that the list of Members published in the College Calendar contained the names of some 2224 Members who were not registered under the Medical Acts of the United Kingdom, and that, while some could be traced as resident in the colonies and abroad, there were many whose addresses were not, and for some years had not been, known; to suggest that in the Calendar for 1918-19 the names of all Members admitted before 1870 whose addresses cannot be ascertained (in number about 1033), be placed in a separate list, and that such list be thereafter omitted from the Calendar. This suggestion was adopted.

DONATIONS AND BEQUESTS.—By the will of the late Mr. William Paulden the Manchester Royal Infirmary will receive £1000 and the St. Mary's Hospital, Manchester, the Hospital for Incurables, Mauldeth, Henshaw's Blind Asylum, and the Deaf and Dumb Schools, Old Trafford, £500 each.—The late Sir J. Wolfe Barry, K.C.B., left by will £1000 to the Westminster Hospital, and on the death of his wife an additional £1000 to the same institution.—By the will of the late Colonel Charles Ford, V.D., the testator left £1000 to the Portsmouth and South Hants Eye and Ear Infirmary for a bed in memory of his parents, and a house in Portsmouth for a convalescent or nurses' home; £200 to the Royal Hospital for Women and Children, Waterloo-road, in memory of much kindness shown to him in North Lambeth; and £100 to the Portsea, Portsmouth, and Gosport Hospital.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. I. K. F. MacLeod, R.A.M.C., qualified at Edinburgh in 1914, and previous to joining the R.A.M.C. was Resident house surgeon at the Royal Infirmary in that city.

Capt. P. G. Milne, R.A.M.C., qualified at Aberdeen in 1915, and joined up shortly afterwards.

Capt. T. Whitelaw, R.A.M.C., attached Duke of Wellington's Regiment, qualified at Glasgow in 1912 and was in practice for a short time at Ammanford, Carmarthenshire.

Died of Wounds.

Capt. H. G. Massy-Miles, R.A.M.C., attached London Regiment, qualified in Ireland in 1909. He held appointments at the Rotunda Hospital, Dublin, and at the Fermanagh County Hospital. For a time he practised at St. Albans, Herts, and at Trafford Park, Manchester.

Capt. H. S. Palmer, R.A.M.C., qualified in Edinburgh in 1914. Joining up soon after the outbreak of war, he was for a time attached to the 1st Home Counties Field Ambulance.

Capt. J. F. Matheson, M.C., R.A.M.C.

Major J. B. Metcalfe, Australian A.M.C., qualified at Sydney in 1911, and was in practice at Manildra, New South Wales, prior to coming over with the Expeditionary Force.

Died.

Major J. W. Little, I.M.S., was a student at St. Thomas's Hospital, London, and qualified in 1900. Joining the I.M.S. shortly afterwards, he saw service at Waziristan, on the N.W. Frontier of India, 1901-02, for which he received the medal with clasp. Later he took part in the operations in Somaliland, and again received a medal with clasp. He reached his majority in 1912, and was for a time Agency Surgeon at Maspat. He died at Karachi in the early part of this month.

Wounded.

Capt. D. W. Anderson, R.A.M.C., attd. Gloucester Regt.
Capt. G. F. Carr, R.A.M.C.
Capt. J. M. MacKay, M.C., R.A.M.C., attached Duke of Cornwall Light Infantry.
Capt. J. Stevenson, R.A.M.C., attd. Bedford Regt.
Capt. J. T. McAuslin, South African M.C.
Capt. S. G. Gibson, M.C., Australian A.M.C.
Capt. W. S. Hawthorne, Australian A.M.C.
Capt. M. H. Mailer, M.C., Australian A.M.C.
Lieut.-Col. C. A. Stidston, D.S.O., R.A.M.C.
Capt. J. I. Lawson, R.A.M.C., attached Irish Guards.
Capt. R. W. Pearson, R.A.M.C., attd. Durham L.I.
Lieut. J. B. Taylor, R.A.M.C., attached R.F.A.
Capt. J. E. G. Thomson, R.A.M.C.
Capt. T. C. D. Watt, M.C., R.A.M.C., attd. Lancs. Fus.
Capt. H. Wilson, R.A.M.C.
Major W. McM. Chesney, M.C., R.A.M.C.
Capt. A. Fordyce, R.A.M.C.
Lieut.-Col. W. R. Gardner, D.S.O., R.A.M.C.
Capt. H. M. Godfrey, R.A.M.C.
Col. J. W. H. Houghton, D.S.O., R.A.M.C.
Lieut.-Col. J. la F. Lauder, D.S.O., M.C., R.A.M.C.
Capt. J. McG. H. Reid, R.A.M.C.
Major L. S. C. Roche, M.C., R.A.M.C.
Capt. J. M. Smith, R.A.M.C.
Capt. C. K. Carroll, M.C., R.A.M.C., attached Dorset Regt.

Missing.

Surg. W. A. McKerrow, R.N.
Capt. S. S. Meighan, R.A.M.C.
Capt. F. J. Nattrass, R.A.M.C.
Lieut. D. Robertson, R.A.M.C., attd. Royal Scots Guards.
Capt. F. C. Nichols, R.A.M.C., attached Yeomanry.

Prisoners in German Hands.

Capt. J. G. Elder, R.A.M.C.
Lieut. G. B. Buckley, M.C., R.A.M.C.
Capt. D. F. Dobson, R.A.M.C.
Lieut. F. J. Power, R.A.M.C., attached Royal Inniskilling Fusiliers.
Capt. L. S. H. Glanville, R.A.M.C., attd. Royal Irish Rifles.
Capt. D. C. Hanson, M.C., R.A.M.C.
Capt. F. R. Tickle, R.A.M.C., attached Rifle Brigade.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. F. P. Smith, R.A.M.C.
Capt. R. R. Duncan, R.A.M.C.
Capt. C. E. Redman, R.A.M.C.
Capt. R. M. Soames, R.A.M.C., attached Norfolk Regiment.

OBITUARY OF THE WAR.

SOLOMON CROSS, M.B., B.S. DURH.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain S. Cross, who was killed in action on March 22nd, was youngest son of W. Cross, of Darlington, and educated at the Royal Kepier Grammar School, Houghton-le-Spring, where he was a scholar. Entering the University of Durham in 1894, he graduated with honours in medicine five years later. He settled in general practice in Jesmond, making a special study of diseases of the nose, throat, and ear, for which appointments at the special departments of Brighton hospitals had prepared him. At the outbreak of war he was on the staff of the Newcastle Throat and Ear Hospital and the Women's Hospital. At first passed only for home service, he was appointed surgeon specialist to the military hospital at Bulford, later volunteering for the trenches, where he became medical officer to a battalion of Northumberland Fusiliers and later to the Suffolks. He was mortally wounded while bending over a wounded man in the open during a withdrawal.

ALFRED LINTON GARDNER, M.R.C.S. ENG.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. L. Gardner, who was killed in action on April 10th at the age of 36 years, was only son of the late Dr. J. T. Gardner, of Ilfracombe. He was a student of Guy's Hospital, London, from which he took the diplomas of the Conjoint Board in 1912. After filling a post at the Poplar and Stepney Sick Asylum he entered the family practice at Ilfracombe until, obtaining a commission in the R.A.M.C. in January, 1917, he went to France attached to a field ambulance. In April last he was temporarily sent to a regiment, with which he met his death a week later, a shell exploding in the regimental aid-post. His superior officer writes of Captain Gardner that he was a fine officer, whose work had saved many lives. In private life Captain Gardner showed musical talent of a considerable order, writing the incidental music for several students' plays while at his hospital and composing songs and orchestral works which have not yet been published. He married in 1913 Muriel, only daughter of the Rev. J. Pullein Thompson, of Chelsea, by whom he had one son.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. W. Parr-Dudley, killed in action, youngest son of Dr. A. Parr-Dudley, of East Malling, Kent.

Lieut. A. C. R. Tate, R.A.F., killed in action, elder son of Col. A. E. Tate, C.M.G., A.D.M.S., Quetta.

Lieut. W. S. M. Ruxton, M.C., Border Regiment, killed in action, only son of Dr. W. L. Ruxton, Newcastle-on-Tyne.

Major J. W. Little, I.M.S., died at Karachi, youngest son of the late Dr. R. Little, of Singapore.

Capt. G. Davies, died of wounds, elder son of Dr. M. Davies, of St. Mary-Axe, London, E.C.

THE HONOURS LIST.

The following awards to medical officers are announced:—

The Military Cross.

Temp. Capt. HENRY DRUMMOND ROBB, R.A.M.C.—For conspicuous gallantry and devotion to duty. On his camp and its vicinity being heavily shelled he was compelled to conduct his sick parade along roads which were at the time under heavy shell fire. He succeeded in leading his wounded cases safely under cover, and later remained behind to attend to the men of a neighbouring unit, which had also suffered some casualties as a result of the intense shelling. His courage and devotion to duty were of the highest order.

Temp. Capt. SAMUEL RUTHERFORD, R.A.M.C.—For conspicuous gallantry and devotion to duty. During a period of 16 hours he tended the wounded in the front trenches without ceasing. Throughout this period he was exposed to heavy shell fire, and for some considerable time the enemy were within a short distance of the aid post. His coolness and presence of mind inspired all ranks with the utmost confidence.

MENTIONED IN DESPATCHES.

The names of the following medical officers are to be added to the list of those given in THE LANCET of August 25th, 1917, p. 333, as being mentioned in a despatch relating to the Mesopotamia Expeditionary Force:—

Capt. A. J. Evans, R.A.M.C.; Temp. Capt. A. T. Gibb, R.A.M.C.

THE CALLING-UP OF MEDICAL MEN.

The position of the medical man under the new Military Service Act, although different from that of other men of military age, is at present wrapped in the same obscurity, and we are glad to understand that the Minister of National Service is shortly issuing to medical men an explanation of the whole position as it affects the medical profession, and of the procedure which is contemplated. It is, at all events, certain that an endeavour will be made to reconcile the three essentials of: (1) meeting the needs of the Army without delay; (2) affording due protection to the civil community; (3) dealing equitably as between doctor and doctor. It is generally recognised that although the doctor's status in the eye of the the law is fundamentally the same as that of other citizens, yet his position is masked in practice by the fact that if he is not required for commissioned service in the Army in his medical capacity it will almost always be in the national interest for him to be employed in civil work of a medical kind. It is this imperative national interest rather than any inherent civic right which confers on the doctor a position which some have regarded as one of privilege. In regard to procedure, the first step will be taken by the Ministry of National Service in securing the medical examination of all the doctors concerned, probably area by area. The Local Arrangements Subcommittee of the C.M.W.C. will then consider what doctors can be spared from the area either at once or at a later stage after substitution. When the subcommittee has decided to investigate in a particular area the usual 14-day calling-up notices will then be issued, in order that claims for exemption may be heard by the subcommittee in their capacity as an ordinary tribunal. Appeal from the subcommittee to the Central Committee will, as heretofore, be admissible; in fact, the process of medical mobilisation is likely to proceed on almost precisely the same lines as those followed during the last two years, with the difference that procedure may be somewhat accelerated, and that a medical man who can be spared from his present occupation may now be employed in other civilian work instead of becoming a medical officer with the Forces.

INVALIDED SOLDIERS IN CANADA.

We glean from the last number of *Reconstruction*, the bulletin issued by the Invalided Soldiers Commission of Canada, a number of interesting details of the way in which the Dominion is dealing with a great problem. Some 30,000 soldiers have now returned to Canada from England and France, of whom more than two-thirds have been referred to the Commission for further treatment, while only about 8000 have been discharged. These figures include 1051 (328 arm and 723 leg) amputation cases with 266 discharges. The vocational training branch of the Commission interviews every convalescent soldier passing through hospital with a view to ascertaining whether or not he is debarred by his injuries from returning to his former civilian occupation. If he is so debarred the Commission

undertakes to train him for some new means of earning his living. The proportion of men who must be re-educated for new occupations has, fortunately, amounted to only about one-tenth of all men passing through the Canadian Military Convalescent Hospitals. Most firms are willing to take back their old employees, even though they be disabled from working at their former benches, for there is usually another corner of the same shop where work can be found for the disabled man if he is given proper training. In the interest of those without such special openings the Commission has undertaken a survey of the principal industries of the country, through which employers will be educated to the opportunities of conserving an important section of Canadian man-power. In this connexion a pertinent passage is quoted from a book entitled "Re-education," by George Edward Barton:—

> There is no economy in using a whole man for work that a part of a man can do as well. If we can train the public, or persuade the uninjured man, that it is hardly respectable to do work that can be done by a cripple, in a short time the well man would feel much as the small boy feels about something that girls can do; that is, he respects the work itself but, taking pride in the fact that he is a boy, he cannot be induced to do it himself. There are plenty of occupations for the crippled, for the blind, even for the insane, which being done by them, will release a stronger worker for some other line of production without interfering with the amount of product.

In offering re-education to the disabled man emphasis is laid on the fact that his pension shall be based purely on physical disability and that the Government is not seeking to reduce its pension bill. In Canada, as in this country, re-education and pension are not alternative.

It is interesting to read that massage as a profession was practically unknown in Canada when war broke out, and when it became necessary for a proportion of the wounded soldiers to be cared for within the Dominion by the Disabled Soldiers Commission the number of trained masseuses and masseurs was found to be quite inadequate. A school was started at Whitby under the direction of Lieutenant (then Sergeant-Major) Kendall. The first plan was to train returned soldiers for this profession, but an insufficient number was obtained. The doors were accordingly opened to women, and a second class initiated at Hart House, Toronto, with about 80 students. Fifty passed masseurs and masseuses are now scattered over Canada and are giving universal satisfaction. The course lasts for six months, but with a further six weeks' instruction in re-educational work, in which a patient practises his remaining fraction of a specific movement until the fullest possible degree of power in the movement is recovered. During the time of instruction the pupils receive $25 a month allowance, and on graduation they sign an agreement to serve for one year in any part of Canada where they may be sent by the Commission, receiving a diploma at the end of that year.

THE Army Council has acquired the workhouse at East Preston for the establishment of a neurological centre. The institution is well situated on the south coast about midway between the towns of Worthing and Littlehampton.

THE SERVICES.

INDIAN MEDICAL SERVICE.

APPLICATIONS for temporary commissions in the Indian Medical Service may be made to the Secretary, Military Department, India Office, S.W.1. In applying, information should be given regarding qualifications, practical experience, age, and nationality. Knowledge of Indian languages and customs is essential.

Applicants will be required, if considered *primâ facie* suitable, to attend at the India Office for an interview with the Medical Adviser and for medical examination. If appointed, they will be required to serve wherever directed, service to be for the duration of the war unless Government should decide for any reason to dispense with an officer's services at an earlier date.

An outfit allowance of £30 will be issued. The rate of pay will be 24s. a day when serving with an Expeditionary Force, unless an applicant is liable to serve under the Military Service Acts, when it will be at the rates admissible for permanent officers of the Indian Medical Service. A gratuity will be awardable after the termination by Government of a period of satisfactory service with an Expeditionary Force Overseas.

Wound pensions and gratuities will be granted under the conditions and on the scale authorised for permanent officers of the Indian Medical Service.

Family pensions and gratuities will also be granted under the conditions and on the scale authorised by the Royal Warrant or Warrants in force for the time being for the families of permanent officers of the Indian Medical Service.

ROYAL NAVAL MEDICAL SERVICE.

To be Surgeon-General: Deputy Surg.-Gen. E. R. Dimsey.

Fleet-Surg. J. Shand to be Deputy Surgeon-General.

Surg.-Gen. J. J. Dennis has been placed on Retired List.

To be temporary Surgeons: T. W. G. Hogg, H. Morrison, A. D. Wall, H. P. Williams.

ARMY MEDICAL SERVICE.

Lieutenant-Colonels from R.A.M.C. to be Colonels: Bt. Col. T. W. Gibbard, W. E. Hardy, H. N. Dunn, E. M. Morphew.

Lieut.-Col. J. Grech, D.S.O., relinquishes the temporary rank of Colonel on re-posting.

Lieutenant-Colonels to be temporary Colonels whilst employed as Assistant Directors of Medical Services of Divisions: N. Falchnie, B. B. Burke.

Temp. Major-Gen. Sir G. H. Makins relinquishes his commission and is granted the honorary rank of Major-General.

ROYAL ARMY MEDICAL CORPS.

Majors to be Lieutenant-Colonels: A. R. C. Parsons, E. W. Powell, C. H. Carr, E. Bennett, A. C. Adderley, Sir Edward S. Worthington.

Major Reginald V. Cowey relinquishes the acting rank of Lieutenant-Colonel on re-posting.

M. Craig to be temporary Lieutenant-Colonel.

To be acting Lieutenant-Colonels: Major (Bt. Lieut.-Col.) B. A. Craig whilst in command of a Medical Unit; whilst specially employed, Temp. Major D. K. McDowell and Capt. E. B. Lathbury.

Capt. R. J. Clausen and Temp. Capts. C. A. Bernard, G. W. Parry, and D. S. Brough relinquish the acting rank of Major on re-posting.

C. Ff. Rolleston to be temporary Major whilst serving at the Manor (County of London) War Hospital.

Major T. C. Lucas is placed on the half-pay list on account of ill-health contracted on active service.

Temporary Captains to be acting Majors whilst specially employed: F. J. Thorne, O. Sh elds, W. F. Abbott, W. Fell, H. K. G. Hodgson, B. Hogan, A. K. H. Pollock.

To be acting Majors:—Temp. Capts.: V. B. Kyle, C. L. T. Arthur, V. H. Mason, H. Dunkerley, R. J. B. Madden, Lieut. J. La F. Lauder, H. F. Wilson, J. P. Davidson, J. S. Doyle, G. E. Neligan, A. R. Jordan, J. H. Thornley, W. Anderson; Temp. Major G. Taylor.

Temporary Lieutenants to be temporary Captains: Ll. W. Davies, T. St. C. Smith, P. McCool, G. Blair.

Temporary honorary Lieutenants to be temporary honorary Captains: E. D. Busby, E. S. Welles, E. S. Fish, F. Packard, C. N. Lewis, W. S. Ramsey, C. M. Van Stone.

Officers relinquishing their commissions: Temp. Capts. E. P. Blashki, T. G. Copestake (on account of ill-health contracted on active service, and is granted the honorary rank of Captain), T. B. Brandon, (acting Major) C. A. L. Evans, P. S. Hopkins; Temp. Lieut. B. K. Nutman; Temp. Hon. Lieut. G. Lucas (on ceasing to serve with a stationary hospital).

ROYAL AIR FORCE.

H. R. Carter, S. J. A. Beale, and H. Stedman are granted temporary commissions as Captains.

D. Pennington is granted a temporary commission as Lieutenant.

SPECIAL RESERVE OF OFFICERS.

Captains to be acting Majors: J. C. Spence, C. Nicholson, W. Hunt, W. McM. Chesney, T. F. Corkill.

Capt. R. J. Stirling to be Major.

TERRITORIAL FORCE.

Lieut.-Col. (temp. Col.) H. D. Brook relinquishes his temporary rank on vacating an appointment as Assistant Director of Medical Services, and is restored to the establishment.

Major W. G. Macfee relinquishes his commission on account of ill-health, and in granted the honorary rank of Major.

Capt. (acting Major) P. T. Rutherford to be acting Lieutenant-Colonel whilst commanding a Field Ambulance.

Captains to be acting Majors whilst specially employed: H. S. Hollis, J. W. Cairns, E. G. Gauntlett, R. M. Vick, J. Taylor, W. H. Manson, F. J. B. Robson, V. H. Wardle, F. R. Eddison, E. L. Martin, W. A. Valentine, B. Hughes, G. E. Nash, J. C. Marklove, E. Babst, E. J. Y. Brash, R. V. Slattery, P. H. Mitchiner, A. E. Barnes, T. H. W. Alexander, H. J. A. Longmore, W. J. Stuart, J. Patrick, R. E. Humphry.

Capt. E. A. Houchin to be acting Major whilst specially employed.

Capt. W. H. G. Ball is restored to the establishment.

Capt. J. A. Gunn is seconded.

Capt. A. Urquhart relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

Capt. W. J. Lacey-Hickey from T.F. Reserves to be Captain.

Lieuts. R. V. Favell and J. W. Hoflin to be Captains.

Capt. A. N. McGregor is seconded for duty overseas.

The undermentioned officers are retired under the provisions of para. 116, T.F. Regulations: Capt. J. S. R. Russell, Lieut.-Col. Sir W. W. Cheyne, Major W. Russell, Major J. H. Nicoll, Lieut.-Col. E. J. Domville, Lieut.-Col. R. Parker.

The undermentioned Lieutenant-Colonels are retired under the provisions of para. 116, T.F. Regulations, and are granted the honorary rank of Lieutenant-Colonel: C. Brook, W. A. Carline, R. Saundby.

F. A. Husbands to be temporary Lieutenant, Northamptonshire Medical Volunteer Corps.

TERRITORIAL FORCE RESERVE.

Col. C. P. Oliver, from Army Medical Service, to be Colonel.

AN electro-therapeutic and massage department has been completed at the Great Northern Central Hospital, prepared to meet attendances amounting to 10,000 per annum.

LITERARY INTELLIGENCE.—Messrs. J. and A. Churchill announce a new book entitled "War Surgery of the Abdomen," by Colonel Cuthbert Wallace, surgeon to St. Thomas's Hospital, in which will be found the experiences of the author and of many specialists in abdominal surgery working in a sector of the battle-line over a period of 30 months.

URBAN VITAL STATISTICS.

(Week ended May 11th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civilian population estimated at 16,500,000 persons, the annual rate of mortality was 15·0, against 15·9 and 14·7 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 14·7, or 0·2 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 0·9 in Gloucester, 4·7 in Gillingham, and 5·1 in Southend-on-Sea, to 25·2 in Liverpool, 28·5 in Aberdare, and 31·5 in Barnsley. The principal epidemic diseases caused 478 deaths, which corresponded to an annual rate of 1·5 per 1000, and included 199 from measles, 172 from whooping-cough, 47 from diphtheria, 45 from infantile diarrhœa, 9 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 3·4 in West Hartlepool, 3·7 in Rochdale and in Stockton-on-Tees, 4·7 in Hull, 6·5 in Wakefield, and 10·9 in Barnsley; whooping-cough of 1·9 in Hornsey, 2·0 in Carlisle, and 2·1 in Merthyr Tydfil; and diphtheria of 1·7 in St. Helens, and 1·9 in Reading. The 832 cases of scarlet fever and 1322 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 43 and 55 below the respective numbers remaining at the end of the previous week; there were also 11 cases of small-pox under treatment, including a new case admitted during the week. Of the total deaths in the 96 towns 129 resulted from violence. The causes of 45 deaths were uncertified, of which 9 were registered in Liverpool, and 5 each in London and Birmingham.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 15·6, against 15·3 and 14·4 per 1000 in the two preceding weeks. The 429 deaths in Glasgow corresponded to an annual rate of 20·1 per 1000, and included 25 from measles, 20 from whooping-cough, 6 from diphtheria, 3 from infantile diarrhœa, and 2 from enteric fever. The 65 deaths in Edinburgh were equal to a rate of 10·2 per 1000, and included a fatal case each of measles, whooping-cough, and infantile diarrhœa.

Irish Towns.—The 164 deaths in Dublin corresponded to an annual rate of 21·4, or 2·8 per 1000 in excess of that recorded in the previous week, and included 10 from whooping-cough, 9 from measles, and 2 from infantile diarrhœa. The 153 deaths in Belfast were equal to a rate of 20·3 per 1000, and included 13 from whooping-cough and a fatal case each of measles, diphtheria, and infantile diarrhœa.

VITAL STATISTICS OF LONDON DURING APRIL, 1918.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 3·9 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 5·3, 4·8, and 4·9 per 1000. The lowest rates in April were recorded in Hammersmith, Chelsea, the City of Westminster, St. Marylebone, the City of London, and Lambeth; and the highest rates in St. Pancras, Stepney, Bermondsey, Wandsworth, Deptford, and Greenwich. Four cases of small-pox were notified during the month, against 5 and 21 during the two preceding months; of these, 2 belonged to Stepney, and one each to Poplar and Lambeth. The cases of small-pox under treatment in the Metropolitan Asylums Hospitals at the end of the month numbered 13, against 5 and 30 at the end of the two preceding months. The prevalence of scarlet fever was about 20 per cent. less than in the preceding month; this disease was proportionally most prevalent in Kensington, Stoke Newington, Bermondsey, Battersea, Wandsworth, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 898 scarlet fever patients at the end of the month, against 1068, 961, and 931, at the end of the three preceding months; the weekly admissions averaged 106, against 132, 111, and 132 in the three preceding months. The prevalence of diphtheria was appreciably less than in the preceding month, and was lower than in any of the preceding six months; the greatest proportional prevalence of this disease was recorded in Paddington, Bethnal Green, Stepney, Poplar, and Bermondsey. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1658, 1665, and 1529 at the end of the three preceding months, numbered 1358 at the end of April; the weekly admissions averaged 143, against 199, 211, and 182 in the three preceding months. The prevalence of enteric fever was about equal to that in the two preceding months; of the 24 cases notified in April, 5 belonged to Hackney, 3 to St. Pancras, 3 to Stepney, 3 to Wandsworth, and 2 to Finsbury. There were 23 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 26, 28, and 23 at the end of the three preceding months; the weekly admissions averaged 3, against 4, 5, and 3 in the three preceding months. Erysipelas was proportionally most prevalent in St. Pancras, Stoke Newington, Holborn, Southwark, Camberwell, and Deptford. The 9 cases of puerperal fever notified during the month included 2 in Fulham and 2 in Wandsworth. Of the 23 cases of cerebro-spinal meningitis, 5 belonged to Wandsworth, 4 to Islington, 3 to Kensington, 2 to St. Marylebone, and 2 to Poplar. No case of poliomyelitis was notified during the month.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ended April 27th the deaths of 5268 London residents were registered, equal to an annual rate of 17·1 per 1000; in the three preceding months the rates had been 20·4, 16·8, and 18·1 per 1000. The death-rates in April ranged from 9·9 in Lewisham, 11·2 in Hampstead, 12·4 in Wandsworth, 13·5 in the City of Westminster, 13·7 in Stoke Newington, and 14·0 in Woolwich, to 21·8 in Holborn and in Shoreditch, 21·9 in Southwark, 22·9 in Bethnal Green, 23·0 in Finsbury, 23·4 in Poplar, and 24·1 in Bermondsey. The 5268 deaths from all causes included 737 which were referred to the principal infectious diseases; of these, 277 resulted from measles, 7 from scarlet fever, 55 from diphtheria, 335 from whooping-cough, 6 from enteric fever, and 57 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in Hampstead. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Chelsea, the City of Westminster, Stoke

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING APRIL, 1918.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Disease.									
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.
LONDON	**4,026,901**	**4**	**399**	**600**	—	**24**	**1**	**9**	**154**	**23**	—	**1214**	**3·9**	—	**277**	**7**	**55**	**335**	**6**	**57**	**737**	**2·4**	**5268**	**17·1**
West Districts :																								
Paddington	122,507	—	7	28	—	1	—	—	3	1	—	40	4·3	—	6	—	4	13	—	4	27	2·9	169	18·0
Kensington	151,535	—	26	15	—	1	1	—	1	3	—	47	4·0	—	1	—	1	12	—	1	15	1·3	196	16·9
Hammersmith ...	114,962	—	8	4	—	1	—	—	5	—	—	18	2·0	—	6	—	—	5	—	5	16	1·8	141	16·0
Fulham	145,186	—	16	15	—	—	—	2	1	1	—	35	3·1	—	7	1	1	9	—	2	20	1·8	161	14·5
Chelsea	57,368	—	2	3	—	—	—	—	2	—	—	7	1·6	—	1	—	—	2	—	2	5	1·1	71	16·1
City of Westminster	122,046	—	4	9	—	1	—	—	6	—	—	20	2·1	—	3	1	2	1	—	3	10	1·1	126	13·5
North Districts :																								
St. Marylebone ...	92,796	—	5	9	—	—	—	1	4	2	—	21	2·9	—	—	—	1	7	—	1	9	1·3	138	19·4
Hampstead	75,649	—	4	12	—	—	—	—	3	—	—	19	3·3	—	—	—	—	—	—	—	—	—	85	11·2
St. Pancras	186,600	—	18	37	—	3	—	—	13	—	—	71	5·0	—	6	—	2	18	1	2	29	2·0	256	17·8
Islington	297,102	—	33	39	—	—	—	1	9	4	—	86	3·8	—	13	2	4	33	1	3	56	2·5	402	17·6
Stoke Newington...	47,426	—	6	8	—	—	—	—	3	—	—	17	4·7	—	2	—	1	—	1	—	4	1·1	50	13·7
Hackney	196,598	—	15	23	—	5	—	—	9	—	—	52	3·4	—	7	—	1	13	1	4	26	1·7	236	15·6
Central Districts :																								
Holborn	35,303	—	1	7	—	—	—	—	2	—	—	10	3·7	—	—	—	1	3	—	—	4	1·5	59	21·8
Finsbury	68,011	—	8	11	—	2	—	—	2	—	—	23	4·4	—	2	—	1	12	—	2	17	3·3	120	23·0
City of London ...	16,138	—	—	1	—	—	—	—	—	—	—	1	0·8	—	—	—	1	—	—	—	1	0·8	19	15·3
East Districts :																								
Shoreditch	89,675	—	8	11	—	1	—	—	2	1	—	23	3·3	—	8	—	1	16	—	6	31	4·5	150	21·8
Bethnal Green ...	107,362	—	7	25	—	—	—	—	5	—	—	37	4·5	—	34	—	3	22	1	1	61	7·4	189	22·9
Stepney	232,010	2	19	56	—	3	—	—	7	1	—	88	4·9	—	23	—	5	23	1	3	55	3·1	377	21·2
Poplar	143,443	1	16	30	—	—	—	—	3	2	—	52	4·7	—	52	—	5	19	—	2	78	7·1	257	23·4
South Districts :																								
Southwark	167,936	—	19	30	—	—	—	1	10	—	—	60	4·7	—	29	—	5	29	—	2	65	5·0	282	21·9
Bermondsey	107,635	—	14	31	—	1	—	—	2	—	—	48	5·8	—	8	—	2	11	—	1	22	2·7	199	24·1
Lambeth	272,038	1	15	23	—	—	—	1	8	—	—	48	2·3	—	15	1	—	15	—	5	36	1·7	336	16·1
Battersea	150,023	—	24	13	—	—	—	—	5	1	—	43	3·7	—	9	—	1	10	—	2	22	1·9	184	16·0
Wandsworth	300,787	—	51	42	—	3	—	2	12	5	—	115	5·0	—	9	—	3	17	—	4	33	1·4	285	12·4
Camberwell	239,461	—	16	44	—	1	—	—	12	1	—	74	4·0	—	17	1	3	17	—	1	39	2·1	296	16·1
Deptford	103,527	—	13	20	—	—	—	—	8	—	—	41	5·2	—	3	—	1	9	—	—	13	1·6	113	14·2
Greenwich	90,440	—	12	18	—	—	—	—	4	—	—	34	4·9	—	11	1	1	14	—	—	27	3·9	127	18·3
Lewisham	161,406	—	18	16	—	—	—	—	7	1	—	42	3·4	—	—	—	4	2	—	1	7	0·6	123	9·9
Woolwich...	131,942	—	14	19	—	1	—	1	6	—	—	41	4·1	—	5	—	1	3	—	—	9	0·9	142	14·0
Port of London ...	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

Newington, the City of London, Lewisham, and Woolwich; and the highest death-rates in Finsbury, Shoreditch, Bethnal Green, Poplar, Southwark, and Greenwich. The 277 deaths from measles were 24 above the corrected average number in the corresponding period of the five preceding years; this disease was proportionally most fatal last month in Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, and Greenwich. The 7 fatal cases of scarlet fever showed a decline of 13 from the corrected average number; 2 belonged to Islington. The 55 deaths from diphtheria were 12 above the average, and included 5 in Stepney, 5 in Poplar, 5 in Southwark, 4 in Paddington, 4 in Islington, and 4 in Lewisham. Whooping-cough again showed, as in the four preceding months, a very marked excess over the average, the deaths from this disease numbering 335, against a corrected average of 111; this disease was proportionally most fatal in Finsbury, Shoreditch, Bethnal Green, Poplar, Southwark, and Greenwich. The deaths from enteric fever numbered 6, against a corrected average of 5. The 57 fatal cases of diarrhœa and enteritis among children under 2 years of age showed a decline of 8 from the average; 6 deaths occurred in Shoreditch, 5 in Hammersmith, 5 in Lambeth, and 4 each in Paddington, Hackney, and Wandsworth. In conclusion, it may be stated that the aggregate mortality in London in April from these principal infectious diseases was 48 per cent. above the average.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of Comitia of the Royal College of Physicians of London on April 25th and of the Council of the Royal College of Surgeons of England on May 9th diplomas of L.R.C.P. and M.R.C.S. were respectively conferred upon 103 candidates (including 14 women) who have passed the Final Examination of the Conjoint Examining Board, and have complied with the by-laws of each College. The following are the names and medical schools of the successful candidates:—

Herbert William Archer-Hall, Birm. Univ.; Norman Dyer Ball, Univ. Col. Hosp.; Ralph William Codrington Ball, Middlesex Hosp.; Mary Rushton Barkas, New Zealand Univ. and Royal Free Hosp.; Hugh Woodward Barnes, King's Col. Hosp.; Dhirendra Nath Basu, Calcutta Med. Col. and Univ. Col. Hosp.; Margaret Eliza Björkegren, Royal Free Hosp.; Alan Gabriel Bodman, Bristol Univ.; Eric John Swithin Bonnett, St. Thomas's Hosp.; Henry Walter Breese, Middlesex Hosp.; Ellinor Marjorie Burnett, Royal Free Hosp.; Trevor Aveling Butcher, Camb. Univ. and Univ. Col. Hosp.; Ricardo Calvo, St. Thomas's Hosp.; Hayward Carpenter, Charing Cross and Univ. Col. Hosp.; Samuel Percy Castell, Camb. and Liverp. Univs.; Charles Eric Cobb, St. Thomas's Hosp.; Oliver Francis Conoley, London Hosp.; Rustam Nusserwanji Cooper, Bombay Univ.; Eric Vere Corry, Univ. Col. Hosp.; Henry Corsi, Camb. Univ. and St. Bart.'s Hosp.; Hedley Chave Cox, St. Bart.'s Hosp.; Joyce Emily Craggs, St. Mary's Hosp.; Leonard Snowden Debenham, Guy's Hosp.; Cecil Lucas Donne, Middlesex Hosp.; Harpur Vernon Edwards, Camb. Univ. and St. George's Hosp.; Huxley Fernando, Ceylon Med. Col. and Middlesex Hosp.; Walter Alan Flynn, Guy's Hosp.; Harold Percy Gabb and Algernon Sanders Green, Univ. Col. Hosp.; Norman Bernard de Medina Greenstreet, Camb. Univ. and St. Thomas's Hosp.; Alice Muriel Griffiths, Cardiff and Royal Free Hosp.; Magdalena Augusta Hilda Hamel, St. Mary's Hosp.; Frederick Roland George Heif, Camb. Univ. and St. Thomas's Hosp.; Cecil Edward Rede Herington, St. Bart.'s Hosp.; Austin George Hewer, Middlesex Hosp.; Christopher Langton Hewer, St. Bart.'s Hosp.; Harold Awberry Hill, Birm. Univ.; Richard Hilliard, London Hosp.; Henry Nevill Hornibrook, St. Bart.'s Hosp.; John Morgan Hughes, Middlesex Hosp.; William Austen Jackman, Bristol Univ.; Marshall Jackson, St. Bart.'s Hosp.; Aneurin Ernest Jenkins, Cardiff and Univ. Col. Hosp.; John Powell Jones Jenkins, Cardiff and Westminster Hosp.; George Henry Johnson, Middlesex Hosp.; Eric Shirley Jones, Birm. Univ.; Noel Edward Harnewell Kemm, Bristol Univ.; George Spencer Lajus Kemp, Sheffield Univ.; Ernest Francis Kerby, Guy's Hosp.; Muriel Elsie Landau, Royal Free Hosp.; Eugene Henri Leon Le Clezio, Herbert John Leviseur and Harold Octavius Long, Guy's Hosp.; Janet McAllister McGill, St. Mary's Hosp.; Gladys Matthews, Royal Free Hosp.; Guy Meadows, Guy's Hosp.; Emanuel Miller, Camb. Univ. and London Hosp.; Henry Morrison, Camb. Univ. and St. Bart.'s Hosp.; George Edward Mullins, Birm. Univ.; John William Welsh Newsome, Middlesex Hosp.; Edward Nissim, Bombay Univ. and Univ. Col. Hosp.; Esther Novinsky, Royal Free Hosp.; Marguerite Henrietta Pam, St. Mary's Hosp.; Manek Jamshedji Panthaky, Bombay Univ. and King's Col. Hosp.; John Peter, Middlesex Hosp.; George Arthur Petrie, Manitoba Univ.; Leonard Duncan Porteous, St. Bart.'s Hosp.; Hywel Tegid Prys-Jones, Cardiff and St. Mary's Hosp.; Philip William Putnam, Camb. Univ. and London Hosp.; Walter Ernst Karl Adolf Quitmann, Univ. Col. Hosp.; Ernest Frank Rabey, Middlesex Hosp.; Richard Harold Reece, Camb. Univ. and St. Bart.'s Hosp.; Dennis Charles Rennie, Birm. Univ.; Florence Mildred Rhodes, Royal Free Hosp.; John Saunders Lewis Roberts, Univ. Col. Hosp.; Gwendolen Mary Rolfe, Royal Free Hosp.; Edward Snow Rose, St. Bart.'s Hosp.; Vasant Ramrao Sanzgiri, Bombay Univ. and Univ. Col. Hosp.; Walter Manley Savery, Middlesex Hosp.; Stanley Nahum Sennett, London Hosp.; Herbert Henry Silley, Univ. Col. Hosp.; Henry Fremlin Squire, Camb. Univ. and St. Bart.'s Hosp.; Gilbert Patrick Staunton, St. Bart.'s Hosp.; Reginald Henry Sunderland, London Hosp.; Edith Marjorie Thom, Cardiff and Royal Free Hosp.; Norman Beattie Thomas, St. Bart.'s Hosp.; George Edwin Tilsley, Bristol Univ.; Humphrey Woodland Toms, Oxford Univ. and St. Bart.'s Hosp.; Howard Branston Troup, London Hosp.; William Stephen Tunbridge, Oxford Univ. and St. Bart.'s Hosp.; Ernest Basil Verney, Camb. Univ. and St. Bart.'s Hosp.; Cecil Heygate Vernon, Camb. Univ. and St. Thomas's Hosp.; Morley Dyson Vint, Camb. Univ. and Lond. Hosp.; Austin Darley Wall, St. Bart.'s Hosp.; Henry George Watters, Lond. Hosp.; Jack Pascoe Wells, Camb. Univ. and St. Bart.'s Hosp.; Aubrey Thomas Westlake, St. Bart.'s Hosp.; Howel Pennant Williams, Liverp. Univ.; Peter Erbin Williams, Cardiff and St. George's Hosp.; Samuel Anthony Withers, Guy's Hosp.; John Eric Wood, London Hosp.; and Eric Arthur Woods, Oxford Univ. and King's Col. Hosp.

The Licence in Dental Surgery was also conferred upon Samuel Isaac Blairmann, of Middlesex and Royal Dental Hosps., who has passed the requisite examinations and has complied with the by-laws of the College.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia was held on May 9th, Dr. Norman Moore, the President, being in the chair. The following recently elected Fellows were admitted: Dr. Walter Broadbent, Dr. H. J. M. Playfair, Dr. F. L. Golla, Dr. A. M. H. Gray, Dr. A. E. Stansfeld, Dr. W. W. C. Topley, Dr. C. H. Bond, Fleet-Surgeon P. W. Bassett-Smith, C.B., R.N., Sir Walter M. Fletcher, and Sir George Newman. On the recommendation of the Censor's Board it was resolved that the licence to practise physic should be restored to Mr. Edmund Lyall Haynes. The President announced the constitution of the "Twilight Sleep" Committee to consist of Dr. H. R. Spencer, Dr. G. Blacker, Dr. J. S. Fairbairn, Dr. H. Williamson, and Dr. H. Russell Andrews. The Comitia was then dissolved.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Primary Examination for the Fellowship held on May 1st, 2nd, and 7th, for which 34 candidates (including two ladies) presented themselves, 7 candidates were approved and 27 were rejected. The following are the names and medical schools of the successful candidates:—

Duncan Gillard Churcher, St. Thomas's Hosp.; Alix Jeanne Churchill, King's Col.; Charles Kellaway, Melb. Univ. and Middlesex Hosp.; Ida Caroline Mann, Lond. School of Med. for Women; Grant Massie, Guy's Hosp.; Hibbert Alan Stephen Newton, Melb. Univ. and Middlesex Hosp.; and Ronald Henry Ottywell Betham Robinson, Camb. Univ. and St. Thomas's Hosp.

EPSOM COLLEGE WAR MEMORIAL.—At a meeting of Old Epsomians held in October last it was resolved that an appeal should be made to Old Epsomians and other friends of the College for funds to rebuild the nave of the chapel in harmony with the new chancel, and to place in it a suitable monument bearing the names of the old boys and masters who have lost their lives in the war. To carry out the plan in a manner worthy of those whom it is intended to honour several thousand pounds will be needed, and an account has now been opened at the London, County and Westminster Bank, 1, Stratford-place, W. The money as received will be invested in war securities until it is required for the building, which will be undertaken immediately after the war is over. Contributions may be spread over a period of years, and cheques should be drawn to "Epsom College War Memorial Fund," and sent either direct to the bankers or to the Rev. W. J. Barton, Headmaster, Epsom College, Surrey, or to Mr. Edred M. Corner, honorary secretary, Old Epsomian Club, 37, Harley-street, W.

EXETER INSURANCE COMMITTEE.—At the last meeting of the Exeter Insurance Committee it was decided, owing to the difficulty of medical men in obtaining locum tenentes, that the rule requiring "panel doctors" to vouch for the fact that their deputy is on the Medical Register and duly qualified to serve on the medical panel should be relaxed for the period of the war.

THE DISPENSARY MEDICAL OFFICERS AND THE IRISH BOARDS OF GUARDIANS.—The dispute between boards of guardians in Ireland and their medical officers still continues. Instead of one scheme sufficiently elastic to be applicable to all areas, each district is trying to solve its own difficulties. For example, in Belfast an increase for the year only of about £15 has been granted to each dispensary doctor; in the Clogher area the guardians on May 11th decided unanimously to allow their medical officers a bonus of £10 a year from April 1st, 1917, for the duration of the war and for two years after, in addition to £5 payable under a resolution of the board passed on Dec. 22nd, 1917. The doctors of the Omagh union have refused the guardians' offer of an increase of £25 per annum, and the chairman stated in reply at the meeting on May 11th that the board could do nothing more, as it was even with difficulty that the members' unanimous consent was obtained to this proposed increase. The dispute in Enniskillen has been settled by giving the dispensary doctors a distinct increase in their annual salary. One of the difficulties in the situation is that in populous urban districts the income of the dispensary doctors is greatly increased by registration fees, a state of affairs quite different in sparsely inhabited rural areas, and the guardians naturally look at this fact in calculating the salaries, but they fail to realise the great increase in the cost of living.

MEDICAL SOCIETY OF LONDON.—At the annual general meeting held on May 13th, the President, Sir StClair Thomson, being in the chair, the following Fellows were elected officers and council for the session commencing October, 1918:—

President: Dr. A. F. Voelcker. Vice-Presidents: Dr. J. H. Stowers, Mr. H. J. Waring, Sir John Broadbent, and Dr. Leonard G. Guthrie. Treasurer: Dr. J. Mitchell Bruce. Librarian: Dr. Voelcker. Hon. Secs.: Dr. Edmund Cautley, Mr. Donald Armour. Hon. Sec. for foreign correspondence: Dr. Herbert R. Spencer.

Council: Dr. Noel D. Bardswell, Dr. S. Henning Belfrage, Dr. W. Ironside Bruce, Mr. L. Vernon Cargill, Mr. H. W. Carson, Mr. Alfred M. Corner, Dr. H. A. Des Vœux, Dr. W. d'Este Emery, Major H. S. Gillies, R.A.M.C., Dr. Theo. B. Hyslop, Mr. Owen Lankester, Mr. Hugh Lett, Dr. C. J. Ogle, Mr. G. C. Parnell, Lieutenant-Colonel D'Arcy Power, Dr. D. Lloyd Roberts, Mr. C. Ryall, Mr. Percy Sargent, Mr. R. Jocelyn Swan, and Sir StClair Thomson.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next quarterly meeting of this association will take place on Tuesday, May 28th, at 11, Chandos-street, Cavendish-square, London, W., under the presidency of Lieutenant-Colonel David G. Thomson, R.A.M.C.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held at West London Hospital on May 3rd, Dr. A. J. Rice-Oxley, the President, in the chair.—Dr. H. Annesley Eccles read a paper on Pitfalls of Radiology, illustrated by lantern slides. He stated that the pitfalls might be placed in three classes—(1) anatomical; (2) pathological; (3) errors of X ray technique—and described examples of each. He claimed that mistakes in the interpretation of skiagrams would be fewer in number and degree if there could be more collaboration between the physician or surgeon and the radiologist. The necessity of taking skiagrams in two planes wherever possible was insisted on, for if this precaution were omitted it would be possible, for instance, to diagnose fractures which had not taken place. The difficulty of differentiating between shadows of renal calculi and other pathological conditions was demonstrated, and it was suggested that radiology alone was incapable of differentiating between calculi and calcareous tuberculous deposits in the kidney.—An interesting discussion, emphasising the points of the paper, was carried on by Major W. McAdam Eccles, Captain Beresford Keen, Dr. Rice-Oxley, Dr. Reginald Morton, Dr. G. B. Batten, and Dr. E. A. Saunders.

Appointment.

WILLIAMS, K. T., M.D., has been appointed Assistant School Medical Officer by the Swansea Education Committee.

Vacancies.

For further information refer to the advertisement columns.

Battersea Polytechnics, W.—Female Assistant Lecturer in Physiology and Hygiene Department. £200.
Bedford County Hospital.—H.S. £174 10s.
Birmingham and Midland Eye Hospital.—H.S. £200.
Bolton Union, Farnworth, near Bolton.—Female Asst. M.O. £383 5s.
Bradford City.—Temp. Female Asst. School M.O.
Bradford Poor-law Union.—Asst. M.O. £500.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Cambridgeshire, Isle of Ely, and Borough of Cambridge Lunatic Asylum, Fulbourn.—Res. Med. Supt. £500.
Cardiff, King Edward VII.'s Hospital.—Female H.S. £200.
Devonport, Royal Albert Hospital.—Res. H.S. £200.
Dudley County Borough.—M.O.H. and School M.O. £650.
Elizabeth Garrett Anderson Hospital (New Hospital for Women).—Female H.P., Two H.S., and Obst. Asst. £50. Also Clin. Assts.
Evelina Hospital for Children, Southwark, S.E.—H.P. and H.S. £160.
Exeter City.—Assist. M.O.H. and Assist. School M.O.
Great Northern Central Hospital, Holloway, N.—H.S. and H.S. in Charge of the Casualty Department. £100 and £130.
Hampstead General Hospital, N.W.—H.S. and H.P. £200 p.a. each.
Hospital for Consumption, Brompton.—H.P. for 6 ms. 30 gs.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. £100.
Huddersfield Royal Infirmary.—Res. H.S. £250.
Manchester Children's Hospital, Pendlebury.—Res. M.O. £200.
Manchester Children's Hospital, Gartside-street.—M.O. £200.
Manchester Corporation.—Temp. Asst. Tuber. Officer. £450.
Manchester, St. Mary's Hospitals for Women and Children.—H.S. £200.
Netley, Welsh Hospital.—M.O. £400.
Oldham Royal Infirmary.—Third H.S. £225.
Pinewood Sanatorium, Wokingham, Berks.—Temp. Res. Med. Sup.
Queen Mary's Hospital for the East End.—H.S.
Reading, Royal Berkshire Hospital.—H.S. £250.
Rochdale Infirmary and Dispensary.—Senior H.S. £400.
Rotherham Hospital.—Junior H.S. £150.
St. Albans, Herts County Asylum.—Temp. Asst. M.O. 7 gs. per week.
Sheffield, Children's Hospital.—H.S. £160.
Stockport Infirmary.—Secretary-Superintendent. £325.
Westminster General Dispensary.—Res. M.O.
Winsley Sanatorium, near Bath.—Asst. Res. M.O. £250.
York County Hospital.—Female H.P. £200.

Births, Marriages, and Deaths

BIRTHS.

ASHLEY.—On May 12th, at Berkeley-square, Clifton, the wife of Surgeon T. E. Ashley, R.N., of a son.
CRICHTON.—On May 9th, at private nursing home, Baggot-street, Dublin, the wife of Captain Brian Crichton, R.A.M.C., of a son.
NABARRO.—On May 9th, at Butler-avenue, Harrow-on-the-Hill, the wife of Dr. David Nabarro of a daughter.
PARAMORE.—On May 5th, at Bath-road, Reading, the wife of Captain W. J. Paramore, R.A.M.C., of twin daughters.
PRICHARD.—On May 8th, at The Horse Fair, Banbury, the wife of E. C. Prichard, M.D., of a son.

MARRIAGES.

GRANT—THORNTON.—On May 2nd, W. J. Grant, B.A., M.D., C.M., C.A.M.C., to Elsie Mary, fifth daughter of Mr. and Mrs. George Thornton, of Fairlawn, Landsdowne-road, Wimbledon.
MACALISTER—MOIR.—On April 3rd, at St. Andrew's Church of Scotland, Bombay, Captain G. H. Macalister, I.M.S., and Margaret Gray, second daughter of the late Mrs. Moir, of Weston House, Helensburgh.

DEATHS.

COHN.—On May 5th, suddenly, of heart failure, J. Cohn, M.R.C.S. Eng., L.R.C.P. Lond., formerly of Belsize-square, Hampstead.
CRACE-CALVERT.—On May 9th, from acute pneumonia, George Alfred Crace-Calvert, J.P., M.B., M.R.C.S., L.R.C.P., in his 47th year.
DIPLOCK.—On May 8th, at Aswood, Heathfield-terrace, Chiswick, Leonard Bramah Diplock, J.P., M.R.C.S., L.S.A., aged 59.
HEBB.—On May 12th, at Ridgmount-gardens, Richard Grainger Hebb, M.A., M.D. Cantab., F.R.C.P. and F.R.M.S.
LITTLE.—On May 7th, at Karachi, John Wishart Little, Major, I.M.S., aged 41.
POWNALL.—On May 8th, at St. Andrew's Vicarage, Roker, Sunderland, Arthur Edward Pownall, M.R.C.P., aged 65.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, May 21st.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 6 P.M.
Annual General Meeting.—Election of Officers and Council for 1918-1919.

Friday, May 24th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S. Blundell Bankart, G. E. C. Pritchard, C. P. Lapage): at 4.30 P.M.
Annual General Meeting.—Election of Officers and Council for 1918-1919.
Exhibition of Cases.

EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, M. Greenwood): at 5.30 P.M.
Annual General Meeting.—Election of Officers and Council for 1918-1919.
Discussion:
On Industrial Tuberculosis. Will be opened by Dr. E. L. Collis (Welfare and Health Section, Ministry of Munitions). The following have signified their intention of taking part in the discussion:—Dr. Brownlee, Dr. Greenwood, Dr. Leonard Hill, F.R.S., Dr. Benjamin Moore, F.R.S., and it is hoped that other Fellows and Members who are interested in the subject will endeavour to be present and contribute to the discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of the Post-Graduate Course were given in the issue of April 27th.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.
(Details of the Post Graduate Course were given in the issue of April 6th.)

THE THROAT HOSPITAL, Golden-square, W.
MONDAY, May 20th.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—
WEDNESDAY, May 22nd.—4 P.M., Lecture IV.:—Capt. W. H. R. Rivers, R.A.M.C.: The Dying out of Native Races. Followed by a Discussion.

COLLEGE OF AMBULANCE, 3, Vere-street, Cavendish-square, W.
Course of Special Lectures and Demonstrations on Ambulance Work and First Aid (illustrated as far as may be possible and followed by a Discussion).
THURSDAY, May 23rd.—4.30 P.M., Lecture II.:—Surg.-Gen. G. J. H. Evatt, C.B., R.A.M.C.: The Evolution of Ambulance Work in the Army.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, MAY 14TH.

Treatment of Neurasthenia at Golders Green.

Viscount KNUTSFORD asked the Government why it was proposed to close the Home of Recovery for Neurasthenic Pensioners at Golders Green, seeing that the monthly reports showed that a very large proportion of the patients treated there were discharged fit for work, and considering the large amount of money which had been expended to fit it for its present purpose. He said that the decision of the Minister of Pensions to cease treatment for shell shock and neurasthenia at Golders Green had come as a great surprise. It was one of the most successful hospitals in the whole country, and was admirably equipped for the work it had to do. The Minister admitted that the work was satisfactory. In the last seven months out of 189 patients 183 had been returned fit for work. When two of the best neurologists went and asked why the hospital was to be scrapped, the answer was that it was in air-raid area, and that it was to be used for paraplegics. That seemed a strange reason. A very small minority of the patients had been disturbed by the noise of the guns, and if there was one class of patients who could not leave their beds in an air raid it was paraplegics. This reason was insufficient for closing the hospital. It was said that another institution was to be started near London at Maidenhead, but it would be quite impossible for experts in neurology to give the same attention to the patients there as they could at Golders Green, and it was quite impossible for ordinary practitioners to treat neurasthenic patients in the same way. He denied that there had been a considerable number of beds unoccupied at Golders Green. Was the decision of the medical advisers of the Ministry of Pensions unanimous in this matter? An expert committee ought to be appointed to inquire into the matter of the transfer.

The Earl of CRAWFORD (the Lord Privy Seal) said that he felt some embarrassment in replying to this question. The answer which he had proposed to give was in contradiction to what the noble viscount had said. The Minister of Pensions had decided upon the recommendation of his medical advisers that a hospital for the treatment of shell shock and neurasthenia within the area of air raid gun-fire was undesirable. Whether the medical advisers of the Ministry were unanimous or not he did not know, but it would be imprudent to decide offhand that no change should be made except there was unanimity. Accommodation had been secured at Maidenhead. It was stated that a large number of men declined to go to Golders Green on account of their apprehension of being in an area of anti-aircraft gun-fire. These men were discharged soldiers and were completely free to enter or refuse to enter any hospital. The number of these men was being diminished by the treatment which they received before discharge.

Viscount KNUTSFORD expressed himself as dissatisfied with the terms of the reply.

HOUSE OF COMMONS.

WEDNESDAY, MAY 8TH.

Indian Medical Service.

Brigadier-General PAGE CROFT asked the Secretary of State for India whether it was proposed to alter the regulations which required a member of the Indian Medical Service to have had 12 years' service before attaining his majority, bearing in mind that this period for combatant officers in the Indian Army had been reduced from 18 to 15 years, and therefore they attained their majority at a younger age than members in the Indian Medical Service who entered the service later in life owing to their long and technical training.—Mr. HERBERT FISHER (on behalf of the India Office) replied: Accelerated promotion in the Indian Army during the war was granted in consideration of the general acceleration of promotion in the combatant branches of the British Army. No similar ground exists for a general acceleration of promotion to major in the Indian Medical Service. As a special measure the Secretary of State for India, in December last, authorised the antedating of the promotion of certain captains of the Indian Medical Service with a view to securing for them a relative equality in seniority with that of corresponding officers of the Royal Army Medical Corps whose promotion had been specially accelerated by war conditions.

Chauffeurs of Medical Men.

In reply to Sir W. WATSON CHEYNE, who asked whether chauffeurs employed by medical men who were carrying on large general practices, not only of their own but also of medical men serving in the Army, and who were very dependent on their experienced driver, might be exempted from military service, Mr. BECK (Parliamentary Secretary to the Ministry of National Service) stated that a certain discretion was vested in National Service representatives to be exercised in urgent and exceptional cases until an efficient substitute had been found. It could not be too strongly urged that all motor drivers fit for military service should be replaced at the earliest moment by either women, unfit men, or men discharged from the forces.

T.N.T. Poisoning.

Mr. ANDERSON asked the Parliamentary Secretary to the Ministry of Munitions whether any case had recently been brought to his notice in which a woman had been kept continuously employed on T.N.T. for a fortnight and had developed toxic jaundice with fatal results; whether the practice of continuous employment on dope was contrary to the official regulations; and whether steps would be taken to secure compliance in all factories with official regulations.—Mr. KELLAWAY answered: I am aware of the case to which my honourable friend refers. It was not a case of dope poisoning but a case of T.N.T. poisoning, which is quite distinct from dope poisoning. So far as the former process is concerned dope is only used in air-craft factories, and since a certain element has been removed from its manufacture it has ceased to be a cause for toxic jaundice. So far as the particular case of T.N.T. poisoning is concerned, under the T.N.T. rules it is only permitted in cases of necessity for a woman to be employed for more than a fortnight continuously on T.N.T. In the case in question alternation was not possible as the factory was incomplete. Since then complete alternation has been effected. The House will be glad to know that the preventive measures taken by the Ministry of Munitions against T.N.T. poisoning have been increasingly effective. The number of cases reported during the last quarter of 1916 was 86 with 23 deaths. The comparison figures for 1917 were 29 cases with 4 deaths.

THURSDAY, MAY 9TH.

Venereal Disease and Defence of the Realm Regulations.

Mr. LEES-SMITH asked the Home Secretary what steps were being taken to inform women arrested under the new Regulation 40d of the Defence of the Realm Acts that they did not need to subject themselves to a medical examination unless they themselves so desired.—Sir G. CAVE replied: I think that this is clear on the face of the regulation and that no steps are required for the purpose mentioned in the question.

Medical Students in the Navy.

Mr. WATT asked the Civil Lord of the Admiralty what arrangements his department was making for the return of medical students from active service to their studies; had his department recently received communications from the Scottish University authorities pointing out the urgency of speedy release in view of the fact that the summer medical session began on April 24th; and, if so, would he say why the delay, as compared with the War Office Department, had arisen.—Mr. PRETYMAN answered: An order was issued to the Fleet in January last calling for reports of the names of all officers and men (other than student probationers), who had, as medical students, passed the first professional examination in chemistry, physics, and biology. On receipt of these reports, the lists are scrutinised and, where such a course appears desirable, the officer or man is allowed to return to continue his studies. Surgeon probationers are allowed to be demobilised at the end of six months' service at home or 12 months abroad in order to complete their studies and qualify. I cannot trace that any communications from the Scottish University authorities pointing out the urgency of speedy release had been received. A number of officers and men had already been conditionally released, but some time must necessarily elapse before the replies from distant stations are received and dealt with. If my honourable friend has knowledge of delay in any particular case, and will furnish me with details, I will inquire further into the matter.

Naval Medical Units and the 1914 Star.

Commander H. CRAIG asked the Civil Lord of the Admiralty whether his attention had been directed to a decision whereby officers and men belonging to His Majesty's hospital ships who were landed in France on active service during the period entitling to the 1914 star had been held to be not entitled to that decoration; and whether, in view of the services performed by these Royal Naval Medical units in evacuating large numbers of our wounded from France and Flanders during that period the claim of the naval ratings concerned would be reconsidered.—Mr. PRETYMAN wrote in reply: The award of the 1914 star is limited to those on the establishments of units landed specifically for shore service and any naval medical detachments so serving are eligible. It is not extended, however, to cover casual landings, such as may be made by the staffs of hospital ships in connexion with their duties in the collection and embarkation of wounded, and the same rule is followed by the War Office in respect of the Royal Army Medical Corps personnel of hospital ships.

Dental Surgeons in Egypt and Salonika.

Mr. PENNEFATHER asked the Under Secretary of State for War whether his attention had been drawn to a certain rest-camp used by soldiers operating in Egypt and Salonika where the floating military population varied from 9000 to 15,000; if so, would he state the number of qualified dental surgeons ordinarily stationed at that camp; how many hours it took to obtain from the nearest available source of supply additional dental surgeons if required; and whether the employment of such additional dental surgeons reduced the efficiency of the dental service at the camp from which they were withdrawn.—Mr. MACPHERSON answered: I am making further inquiry by telegraph into this matter, and I will communicate with my honourable friend as soon as possible.

Recruits for the R.A.M.C.

Answering Mr. WING, Mr. MACPHERSON (Under Secretary for War) said: Recruits are still being accepted for the Royal Army Medical Corps subject to certain limitations as to age and medical fitness.

Housing Requirements in Scotland.

Mr. MUNRO (Secretary for Scotland) informed Colonel Sir J. HOPE that from the schedules received up to date it appeared that the total number of houses which local authorities considered to be required in Scotland was 108,902.

MONDAY, MAY 13TH.

Dental Practitioners and Military Service.

Mr. WATT asked the Parliamentary Secretary to the Ministry of National Service whether he was aware that dentists under 30 years of age had been exempt from military service on a finding of the Central Tribunal that there was a shortage of dentists for the needs of the people; whether, under the new Act, older dentists who possessed the medical qualification but had never practised medicine were being pressed into the Royal Army Medical Corps; and, if so, would he explain why the older men were being taken first.—Mr. BECK replied: The administrative arrangements to which my honourable friend refers do not confer exemptions on dentists under 30 years of age, but lay down certain conditions on which dental practitioners may in proper cases be exempted by tribunals. The answer to the second part of the question is in the negative, and the third part therefore does not arise.

Gratuity of Territorial Medical Officers.

Sir W. WATSON CHEYNE asked the Financial Secretary to the War Office what was the reason why medical officers belonging to the Territorial Force could not be paid the gratuity which they had earned annually, as was the case with temporary medical officers; and was he aware that hardship often resulted from deferring this payment.—Mr. FORSTER answered: The gratuity provided in the Pay Warrant for Territorial Force officers of all kinds is not payable until the completion of service. In the case of the temporary medical officer the terms of the contracts provide for the payment of an annual gratuity.

Neurasthenic Patients at Golders Green.

Sir W. COLLINS asked the Pensions Minister whether he had received satisfactory reports of the treatment of neurasthenic patients at the Home of Recovery at Golders Green, established by the British Red Cross Society; and whether the institution was maintained, and would continue to be maintained, by the Ministry of Pensions for the treatment of such patients.—Mr. HODGE wrote in reply: The reports which have been received of the treatment of neurasthenic patients at the Home of Recovery, Golders Green, are satisfactory, but I have decided on the recommendation of my medical advisers that patients suffering from these diseases should be removed as far as possible from anti-aircraft gun-fire. Fifty per cent. of the cases that are offered accommodation at Golders Green have declined to enter the institution. Many of the reasons alleged are on account of the fear of air raids, and a large number of the beds available are not in use. I have provided another institution in the country where new cases suffering from shell shock will be sent as they present themselves.

Answering Sir MONTAGUE BARLOW, Mr. HODGE stated that accommodation in a rural district admirably suited for the treatment of shell-shock and neurastnenia cases had been procured at some distance from London.

Sir Robert Armstrong-Jones has been appointed Gresham Professor of Physic in place of the late Professor F. M. Sandwith.

Mr. G. J. Muriel, M.R.C.S. Eng., consulting surgeon to the Whitehaven and West Cumberland Infirmary, has been placed on the Commission of the Peace for the county of Cumberland.

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

We cannot prescribe or recommend practitioners.

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. J. F. Ashby, Lond.; Australian Imperial Force, Lond., D.M.S. of.

B.—Messrs. Butterworth and Co. (India), Ltd., Calcutta; Capt. H. Burrows, R.A.M.C.(T.); Major J. H. M. Bell, C.A.M.C.; Mrs. S. W. Bayly, Lond.; Mr. W. P. Burton, Lond.; Mrs. K. M. Batchelor, Taunton; Dr. C. H. Browning, Lond.; Dr. E. F. Buzzard, Lond.

C.—Mr. R. H. A. Carter, Lond.; Dr. B. G. R. Crawford, Chester; Dr. A. V. Clarke, Lond.; Mr. J. Cabburn, Lond; Dr. F. G. Crookshank, Lond.; Dr. J. M. Campbell, Lond.; Dr. A. Cambell, Southsea; Mr. A. L. Clarke, Lond.

D.—Dr. S. Davies, Woolwich; Sir Arthur H. Downes, Lond.; Mr. C. Dodgson, Lond.; Mr. R. Durand, Lond.; Miss L. Davies, Lond.; Dr. J. W. Dowden, Edinburgh; Staff-Surg. S. F. Dudley, R.N.

E.—Dr. F. W. Edridge-Green, Lond.; Messrs. Elders and Fyffes, Lond.; Mr. F. S. Edwards, Lond.

F.—Dr. D. Fenton, Blackburn; Capt. W. Fletcher, R.A.M.C.

G.—Mr. A. Grant, Lond.; Great Northern Central Hospital, Lond., Secs of; Capt. H. Goodale, R.A.M.C.

H.—Lieut. J. B. H. Holroyd, R.A.M.C.; Prof. J. Hutchinson, Lond.; Mr. C. R Hewitt, Lond.; Mr. J. T. Henderson, Pietermaritzburg; Prof. R. Howden, Newcastle-on-Tyne; Dr. A. C. Houston, Lond.; Capt. E. Hindle, R.E.; Homes for Inebriates Association, Rickmansworth.

I.—India Office, Lond.

J.—Dr. G. Jessel, Wigan; Dr. M. Macnaughton Jones, Lond.

K.—Dr. H. C. Kidd, Bromsgrove; Mr. H. King, Burgess Hill.

L.—Dr. R. E. Lord, Colwyn Bay; Dr. R. W. Leftwich, Lond.; Mr. R. Lake, Lond.; Lord Roberts Memorial Fund, Lond.; Local Government Board, Lond., Sec. of; Dr. C. Lillingston.

M.—Dr. J. A. Murray, Lond.; Ministry of Pensions, Lond.; Dr. O. May, Lond.; Dr. I. B. Muirhead, Lond.; Mrs. G. McClatchey, Buxton; Miss Metcalfe, Liversedge; Lieut. G. H. Mead, R.A.M.C.; Mr. J. Y. W. MacAlister, Lond.; Major C. A. Morton, R.A.M.C.(T.).

N.—New York Public Library, Reference Librarian of; Major C. Noon, R.A.M.C.; National Baby Week Council, Lond.

O.—Mr. J. Offord, Lond.; Oyster Merchants and Planters Association, Lond.

P.—*Philippine Journal of Science*, Manila, Business Manager of; Dr. F. C. Poynder, East Grinstead; Miss K. Pilkington, Lond.; Dr. A. Portocalis, Athens; Mrs. J. G. Palmer, Maxwellton; Mr. T. H. Parke, Buxton.

Q.—Dr. M. Quackenbos, Taunton.

R.—Mr. M. Riazuddin, Delhi; Royal Microscopical Society, Lond.; Royal Academy of Medicine in Ireland, Dublin; Mr. W. Richards, Beckenham; Royal Institution of Great Britain, Lond.; Dr. J. D. Rolleston, Lond.; Dr. W. C. Rivers, Worsboro' Dale; Royal Society, Lond.

S.—Mr. F. A. U. Smith, Minneapolis; Mrs. M. D. Stewart, Rathgar; Dr. C. F. Sonntag, Lond.; Capt. R. Steele, R.A.M.C.; Dr. H. H. Sanguinetti, Lond.; Médecin Major J. A. Sicard; Major R. P. Strong.

T.—Dr. W. W. C. Topley, Lond.; Capt. W. J. Tulloch, R.A.M.C.

V.—Vitamogen, Ltd., Lond.; Dr. Voorhoeve, Amsterdam.

W.—Mr. A. Watson, Banff; Mr. W. Wilson, Birmingham; Col. Sir Almroth Wright, C.B., A.M.S.; Dr. A. J. Walton, Lond.; Capt. G. H. Whale, R.A.M.C.(T.); Dr. F. P. Weber, Lond.; Mr. E. Whiston, Bath; Dr. E. H. Walker, Derby; Mrs. A. M. Waller, Lond.; Women's Co-operative Guild, Lond., General Sec. of; Dr. E. M. Walters, Liverpool; Capt. H. J. Wheeler, R.A.M.C.

BOOKS, ETC., RECEIVED.

LIBRAIRIE BAILLIÈRE, J. B., ET FILS, Paris.
Prothèse et Chirurgie Cranio-maxillo-faciale. Par J. Lebedinsky. Dentiste des Hôpitaux de Paris, et M. Virenque, Ancien Interne Médaille d'Or des Hôpitaux de Paris. Préface de M. le Dr. Delagenière. 27 fr.

SAUNDERS (W. B.) COMPANY, Philadelphia and London.
Principles of Hygiene: For Students, Physicians, and Health Officers. By D. H. Bergey, M.D. Pennsylvania. 6th ed., revised. 16*s.*
Practical Text-book of Infection, Immunity, and Specific Therapy. By J. A. Kolmer, M.D. 2nd ed.
The Practice of Pediatrics. By Charles Gilmore Kerley, M.D. 2nd ed., revised. 28*s.*
A Text-book of Obstetrics. By Barton Cooke Hirst, M.D. 8th ed., revised. 21*s.*
Infant Feeding. By C. G. Grulee, M.D. 3rd ed.
American Addresses on War Surgery. By Sir Berkeley Moynihan, C.B., Temporary Colonel, A.M.S. 7*s.* 6*d.*
Food in War Time. By Graham Lusk, Ph.D. 2*s.* 6*d.*
The Third Great Plague. A Discussion of Syphilis for Everyday People. By John H. Stokes, M.D. 6*s.* 6*d.*

UNION OF DEMOCRATIC CONTROL, London.
The Secret Treaties and Understandings. By F. Seymour Cocks, and a Preface by C. Trevelyan, M.P. 2*s.*

Notes, Short Comments, and Answers to Correspondents.

THE PERSONNEL OF THE U.S. ARMY MEDICAL DEPARTMENT.

THE last available figures give the numbers of commissioned officers in the Medical Department of the United States Army as follows:—

Medical Corps: 827, including 1 major-general, 66 colonels, 102 lieutenant-colonels, 176 majors, 3 captains, and 479 lieutenants.

Medical Reserve Corps: 18,206, including 1107 majors, 4246 captains, and 12,853 lieutenants. On active duty: 15,174, including 986 majors, 3727 captains, and 10,461 lieutenants.

Medical Corps, National Guard: 1229, including 15 lieutenant-colonels, 253 majors, 150 captains, and 811 lieutenants.

Medical Corps, National Army: 93, including 3 brigadier-generals, 11 colonels, 72 lieutenant-colonels, and 7 majors.

Besides medical officers, there are a number of commissioned officers in dental, veterinary, and sanitary duty:—

Dental Corps, 209; Dental Reserve Corps, 5153, of whom 1343 are on active duty; Dental Corps, N. G., 259; Veterinary Corps, 24; Veterinary Reserve Corps, 1426, of whom 823 are on active duty; Veterinary Corps, N.G., 57; Veterinary Corps, N. A., 296; Sanitary Corps, 1017; and Ambulance Service, 143.

Of the 1301 officers discharged from the Medical Reserve Corps the following causes are given: Physical disability, 476; inaptitude, 190; other branches of the service, 383; domestic troubles, 30; needed by the community, 35; deaths, 43; dismissals, 2; resignations, 142.

FRACTURE OF THE SPINE IN A DOG TREATED BY CHARCOT'S SUSPENSION.

IN the *Veterinary Journal* for May, 1918, Mr. G. Mayall, M.R.C.V.S., of Bolton, relates the case of a fox terrier dog that had been knocked out by a motor with the result that the posterior half of the spine took a semicircular shape, while the animal had little control over its right hind leg. A fracture of the spine was accordingly diagnosed to be present. Applying Charcot's method of suspension in spinal lesions the dog was held up by its hind legs off the ground for a minute or so twice daily, ending with a shake down, producing tension on the hind legs and spine. Visible improvement began on the third day. The spinal curvature was straightened and the right hind leg began to come in normal use. The dog now walks well.

AMYCAÏNE.

WE have received from Messrs. A. Brezet and Co., of 145, Wool Exchange, London, E.C., specimen ampoules of amycaïne described as the new French local anæsthetic. The drug shows a complex composition, but is a definite chemical compound of the bihydrochloride of novocaine and amyleine. The advantages which as a local anæsthetic it is stated to possess over novocaine alone appear to be due to the introduction of the amyleine molecule which chemically is di-methyl-amino-benzyl-pentanol. These advantages refer to its rapid action, to its freedom from irritating action when injected into the tissues, to its widespread effects, and to its minimal toxicity. Further, it is said to be stable and unchanged by sterilising, even when done repeatedly. Amycaïne is prepared in a physiological saline solution, sterilised by heat and not by filtration, and adrenalin added.

CANCER PROPHYLAXIS IN MAN.

A RECENT number of the *West London Medical Journal* is largely devoted to a paper by Dr. A. Knyvett Gordon on the Cancer Problem and its Clinical Significance and the discussion which followed the reading of the paper at the West London Medico-Chirurgical Society. Starting from the hypothesis that mice can be rendered immune to an inoculated cancer by a previous inoculation of certain normal tissues, of which he cites embryo skin, mammary gland, placenta, and spleen in diminishing order as the most efficacious, Dr. Gordon suggests the clinical trial of injections of human placenta as a prophylactic measure in individuals of the cancerous age. He has practised placenta inoculation on himself without more inconvenience than a little local irritation. The conception that cancer prophylaxis in man can be attained even partially by such means seems to us to have at present few or no facts to support it. On the contrary, it has been recorded several times that mice rendered firmly resistant to tumour inoculation, have subsequently developed spontaneous new growths of their own. Haaland has shown further that even the most efficient methods of immunisation against propagated new growths have been quite powerless to affect the success of autologous implantation of a spontaneous tumour. Prophylaxis on Dr. Gordon's lines has therefore not advanced beyond the stage of interesting speculation.

SUN MENINGITIS RELIEVED BY LUMBAR PUNCTURE.

Mr. R. W. Burkitt, F.R.C.S. Irel., writes from Nairobi of the prompt relief given to two cases of sun meningitis by tapping the spinal theca.

1. In a European child, 4 years old, who, after exposure all day to the sun with insufficient head covering, began to have fits and appeared to be dying, lumbar puncture showed fluid at a pressure so high that it hit the wall at the other side of a small room. After puncture the child at once fell into a calm sleep. Next day he was comparatively well, merely complaining of a little headache and stiffness of the neck.
2. An adult European male, of temperate habits, became gradually unconscious in the sun. After about 12 hours he regained a little consciousness, and complained of agonising headache and pain in the muscles of the back of the neck. About 20 c.cm. of cerebro-spinal fluid were removed at three times the normal pressure. On awaking from the chloroform headache was nearly gone, pulse 90 instead of 44. In less than a week he was at his work.

In both cases the laboratory report of the fluid was negative. Mr. Burkitt regards the cases as instances of sun meningitis, and queries whether heat-stroke may have the same pathology in an increase of cerebro-spinal fluid, and yield in the same prompt way to lumbar puncture.

MUCOUS COLITIS TREATED WITH CHARCOAL.

To the Editor of THE LANCET.

SIR,—I was interested in Dr. T. B. Broadway's Notes on Cases of Mucous Colitis treated with Charcoal in THE LANCET of May 4th. I have found charcoal to be useful in the treatment of post-dysenteric colitis, especially in chronic cases. Two or three teaspoonfuls given in a cup of sweetened arrowroot every night result after a short time in a marked diminution in the frequency of the stools, which become formed and less offensive. The intestinal flatulence is also relieved. Care should be taken to use only pure willow charcoal.

I am, Sir, yours faithfully,

R. STEELE,
Captain, R.A.M.C.

May 8th, 1918.

ASCARIDIASIS SIMULATING APPENDICITIS.

To the Editor of THE LANCET.

SIR,—The case described by Dr. Alan Kidd in THE LANCET of May 4th reminds me of a similar one occurring when I was in charge of a hospital in South India.

A native child, aged 7, was brought to hospital with a history of vomiting, abdominal pain, and fever. On admission the temperature was 103° F. and she was evidently in great pain. On palpation there were pain and tenderness in right iliac region and some swelling. On gentle palpation of swelling there was a faint, fine crackling sound or rather sensation, something like one would imagine would be caused by the presence of a cracked egg-shell under the skin, quite different from the gurgling of enteric. Laparotomy was not permitted by the relatives, and as my experience in such cases had made me come to look upon this fine crackling as almost pathognomonic of a mass of round worms in the intestine, the child was treated accordingly. Her after-history was similar to that of the recorded case. The total number of worms passed was 159.

It would be interesting to know if others have noted this particular sign, and if it is of sufficient persistence to be of any value in arriving at a diagnosis.

I am, Sir, yours faithfully,

ETHELWYN M. WALTERS, M.B., Ch.B.,
Assistant Superintendent, C.S.S. Co., Ltd.; late Superintendent, St. Martin's Hospital, S.P.G.,
Ramnad, S. India.

May 5th, 1918.

THE CONDITION OF THE BLOOD AND BLOOD-VESSELS IN SHOCK.

To the Editor of THE LANCET.

SIR,—In a leading article on the Nature and Treatment of Wound Shock in THE LANCET of March 9th reference is made to the conclusions reached by a Special Investigation Committee of the Medical Research Committee. In regard to the question of the "lost blood," these conclusions appear to me to be remarkable. Starting with the assumption that in shock the blood is of necessity stored in some part of the vascular system, the theory is developed that "if in wound shock the lost blood is not in the arteries and probably not to a great amount in the veins, it must be mainly stagnant in the capillaries." The report does not state in which capillary area the lost blood is to be found. Such blood as remained in the capillaries examined was found to be in a state of concentration—i.e., deficient in plasma. What has become of this plasma is not clearly indicated.

To me the clinical picture presented by the shocked patient suggests that (1) the walls of the arteries, veins, and capillaries are all in a state of contraction (probably active), resulting in a greatly diminished capacity of the vascular system as a whole; (2) the vascular system, its capacity being greatly diminished, is no longer capable of containing its usual volume of blood; (3) the volume of blood is diminished by escape of plasma from the vascular system into the tissues; (4) the problem of the "lost blood" is largely a question of "lost plasma."

I am, Sir, yours faithfully,

C. HAMILTON WHITEFORD.

Plymouth, May 10th, 1918.

A SWISS MEDICAL BENEVOLENT INSTITUTION.

THE *Hilfskasse für Schweizer Aerzte* was founded in 1882 with the primary object of assisting the widows and orphans of medical men when insufficiently provided for. In exceptional cases assistance is also given to medical men themselves. Payments have averaged frs.16,000 a year for the last five years, 40 widows and 4 doctors being assisted during the year 1917. The reserve fund now stands at frs.248,000. Administrative expenses amount to less than 5 per cent. of the total outlay and the institution is supported entirely by voluntary subscriptions.

DALRYMPLE HOUSE, RICKMANSWORTH.

THE report of Mr. F. S. D. Hogg, medical superintendent of the Home for Inebriates, Dalrymple House, Rickmansworth, shows that during the year ending January, 1918, 47 new patients were admitted, 18 under the Inebriates Act and 29 as private patients. Of these, 38 were cases of alcoholism and 9 suffering from drug addiction. With regard to the latter patients, it was conjectured that, owing to the free administration of morphine among the wounded, either on the battlefield or subsequently at hospitals, there would be a large increase in the number of drug-takers in this country, but this is not borne out by Mr. Hogg's report, for he states that he has not admitted a single case whose drug habit was started by surgical treatment for wounds, nor has he heard of such cases having been received at other institutions. Of the patients discharged from Dalrymple House who have entered one or other of the services, most have done well, the physical training and discipline to which they were subjected being responsible for their improvement, though patriotism, Mr. Hogg points out, has been a helpful factor.

"THE ATHENÆUM" SUBJECT INDEX.

THE latest fasciculus of this useful subject index to periodicals deals with science and technology and is issued at the request of the Council of the Library Association by *The Athenæum* (Bream's Buildings, Chancery-lane, London, E.C.4, price 10*s*.). There are 145 pages, each containing two columns of some 25 items and a large number of scattered articles on hygiene and allied subjects are here made accessible.

GENTIAN VIOLET IN JOINT INFECTIONS.

IN the *Journal of the American Medical Association* for April 13th Dr. John W. Churchman, professor of surgery in Yale University, describes the treatment of infected joints by lavage and direct application of a 1 per mil. solution of gentian violet, which has proved most effective in his hands. The following case will serve as an illustration:—

> A boy with acute pyogenic infection of left knee, following a slight wound of the lower leg. The fluid withdrawn from the joint was thickly purulent, and a pure culture of *Staphyl. aureus* was grown from it. The joint was irrigated with salt solution and stained with 1:1000 gentian violet, the dye being left in the joint for five minutes under considerable pressure. A small amount of 1:10,000 gentian violet was then left in the joint. Five or six days later the operation was repeated. At this time the fluid withdrawn from the knee was normally limpid synovial fluid, very slightly stained with gentian violet, and the cultures made from this fluid were negative. The washings and stainings were repeated. The symptoms disappeared, and the boy when discharged had a normal knee, with no restriction of movement.

The method has been tried for pyorrhœa alveolaris, and is now being studied by the author in parasitic skin diseases.

A LONDON DIRECTORY OF DISTRICT NURSING.

WE have received from Sir Arthur H. Downes a copy of the "Directory of District Nursing and Street List for London," which it is hoped will be of service to medical men, social workers, and others engaged in the various health services in London. London suffers under a real disability as compared with every other locality in the matter of ease of reference, and it is on this rock that much well-intentioned but ill-directed work founders. The Central Council for District Nursing in London has now made it possible to see at a glance in what locality, postal district, city, borough, or Poor-law union any one of 20,000 streets and places is situated, with the name and address of the district nursing association or parish nurse responsible for the work in the street or place. This is a great achievement, and has only been made possible by a large expenditure of money and a larger amount of intelligently directed labour. The Council may never be repaid for either service by the actual sale of the directory, which can be obtained for 2*s*. 6*d*. on application to the honorary secretaries (Miss A. Hughes, 16, Claverton-street, S.W.1, or Miss Z. L. Puxley, L.G.B., Whitehall, S.W.1), or through Messrs. King and Son (Orchard House, Westminster, S.W.1), but recompense will come in the added efficiency of every kind of reconstructive work in London which the issue of the directory has made possible. Incidentally the lists of municipal and Poor-law authorities and of London hospitals and child-welfare centres will be found useful. The fact that the Zoological Gardens are covered by the activities of the Paddington and Marylebone D.N.A. should not be left unnoticed.

FEES FOR MEDICAL ATTENDANCE ON THE WIFE OF A MEDICAL PRACTITIONER.

IN an action recently tried by Mr. Justice Bailhache the plaintiff, Dr. F. J. Nicholls, sued Dr. P. de Santi and his wife for fees for medical attendance upon the wife of the latter. In defence it was pleaded that it was intended by the parties that the attendance should be gratuitous, the husband of the patient being a medical practitioner; that credit was given exclusively to the wife, who was to pay such sums as she could out of money to be received by her for the purpose from a relative; and thirdly, that the charges made were unreasonable and excessive. At the conclusion of the evidence of the plaintiff, who admitted the custom with regard to attendance upon the family of a colleague, and the fact that he originally looked to the wife for payment as she might be able to make it, and after perusal of the correspondence, the learned judge held that the plaintiff's action must fail, but described the result that would thus be arrived at as unsatisfactory, and suggested an arrangement. It is hard on Dr. de Santi that neither his evidence nor that of his wife was taken. After counsel had consulted, it was agreed that there should be judgment for the defendants with costs, but that a payment should be made in respect of the fees claimed, the amount of which should be decided by a medical practitioner to be nominated by Sir Henry Morris.

A TAILOR'S THIMBLE IN THE NASO-PHARYNX.

IN the *Monatschr. f. Ohrenheilk.* Schönfeld narrates the case of a 6-year-old child taken direct to a Roentgen institute by the parents with the story that a tailor's thimble had been swallowed. Examination of the œsophagus and stomach on the screen failed to demonstrate the foreign body, which was discovered subsequently by the surgeon in the naso-pharyngeal space.

HALLEX OR HALLUX?

To the Editor of THE LANCET.

SIR,—Some time ago when looking over the glossary pages of Brockway and O'Malley's Anatomy, second edition, edited by Bern B. Gallaudet, I noted the following: "Hallex, hallicis or allex, allicis, M. (L.) Gr. Hallomai, I leap, the great toe or thumb. There is no authority for Hallux, hallucis; hallus or allus kindred with allex has the genitive alli. Alex, alēcis, f. and m. fish brine or sediment." Lewis and Short's Latin Dictionary confirms hallex and nowhere gives hallux.

In every book on anatomy within my reach I find the erroneous hallux an invariable entry. Quain, the Heitzmanns, Gerrish, Morris, Gray, Ellis, and Wilson are all at fault. Even Dorland, the medical lexicographer, who presumably should be an authority on the correct spelling of anatomical names, perpetuates the mistake. I think that an inaccuracy, however small in standard works, is worth attention, and I hope the various editors concerned will give the great toe its due of designation in Latin.

I am, Sir, yours faithfully,

May 13th, 1918. AMICUS CURIÆ.

*** Our correspondent writes as though Robert Ainsworth's "Compendious English and Latin Dictionary" were no longer an authority. This great eighteenth-century scholar, who dedicated his dictionary to the equally great eighteenth-century physician, Dr. Richard Mead, gives both Hallus and Hallux as meaning the great toe. He derives Hallus from Hallomai (salio), "quod super proximum digitum scandat," and gives his classical authority.—ED. L.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 15th, 1918.

Date.	Rain-fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May 9	...	119	70	47	51	56	Fine
,, 10	...	104	57	45	47	50	Cloudy
,, 11	...	84	51	41	44	46	Overcast
,, 12	0·10	105	66	44	50	55	Cloudy
,, 13	0·11	87	58	45	49	50	Raining
,, 14	0·11	101	64	46	49	51	Overcast
,, 15	...	87	63	49	54	58	Cloudy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c., have been received:—Journal of Laryngology, Rhinology, and Otology, New Zealand Medical Journal, Dublin Journal of Medical Science, American Journal of Obstetrics, Edinburgh Medical Journal, Albany Medical Annals, Archives Médicales Belges, Therapeutic Gazette, Cleveland Medical Journal, American Journal of Surgery, Journal of State Medicine, American Journal of Public Health, American Journal of Ophthalmology, Maryland Medical Journal, Annals of Tropical Medicine.